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UNIVERSITY OF ALBERTA

A DESCRIPTIVE ANALYSIS OF SELECTED CHINESE COACHING BEHAVIOR

by

WENQI CHEN ©

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF PHYSICAL EDUCATION AND SPORTS STUDIES

EDMONTON, ALBERTA

FALL 1991

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Abstract

The analysis of coaching behavior provides a means to categorize and describe behavior emitted by a coach during practice sessions and to help the coach better understand what he is doing. The purposes of the study were to develop and validate a Mandarin Coaching Behavior Observational System (MCBOS) appropriate for describing Chinese coaching behaviors.

Coaching Behavior Observational System (CBOS) developed by Smith (1978) was taken as the starting point for the development of the MCBOS. Comprehensive analysis of the CBOS and of some other 39 published systems was carried out both at theoretical level and in actual analysis of coaching sessions of video recorded coaching sessions to generate tentative categories and ground rules of the MCBOS.

The data used for validation of the tentative categories of MCBOS were collected directly from actual Chinese coaching sessions. Seven Mandarin experts offered their opinion to validate the system.

As a result of the study a twelve-category system a long with thirteen ground rules for using the system in a systematic manner was identified.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

One important element of any sporting environment is, with little doubt, the coaches. They play a key role in improving the quality of the experience offered to sport participants. Ryan (1981) states that:

> Any effort to understand sport psychology must involve the athletic coach. The coach has become a gigantic figure in the sports world. He is, in fact, so central to athletics that we must understand him before we can understand athletics. (p. 82)

It is often the case, in the actual coaching and learning process, that many coaches, regardless of the level of coaching, bring with them their own experiences gained as an athlete. They tend to coach as they were coached during their playing career. As Darst, Langsdorf, Richardson, and Krahenbuhl (1981) pointed out:

> In many cases [of coaching], it appears that potentially helpful information has been ignored. This includes information about: the needs, interests and characteristics of the participant, information of learning theories for instructional practice, application of current research to teaching or coaching, variables that affect the teaching learning process, and specific behaviors that are used by successful coaches. (p. 13)

Coaching is educational in nature and focuses on the development of competence, and for some, the pursuit of excellence. Teaching is the process of helping the learners to acquire a body of new knowledge, new physical skills or techniques, and new attitudes. And coaching is a special form of teaching (Smith, 1978; Ryan, 1981). Keller (1982) states that to realize fully what coaching includes, three areas of learning must be clearly understood: (a) that the attainment of knowledge involves obtaining and organizing information essential in arriving at an understanding that can be applied; (b) that fixed associations, stimulus-response patterns, make up a significant proportion of the outcomes of coaching. These are automatic responses acquired when one learns to execute mental and physical skills; and (c) that emotional learning, the patterns of feelings associated with skill acquisition are an integral outcome of coaching: desires, appreciations, respect, loyalty, and sportsmanship. Because of the high degree of commitment and prolonged, intense involvement, it is likely that few other fields of teaching offer more opportunities to influence emotional learning than does coaching.

There are many things we need to know about the nature of the coaching role: what a coach does, how they exert influence on skill learning, motivation and performance of young participants, what aspects of a coach's behavior influence participants' attitudes toward the coach, toward sport participation, and toward themselves. Many would accept the view that in addition to home and school, sport participation can be another means of assisting self-growth and self-discovery for the young participants. In order to make full use of this means it is important that researchers examine the basic processes of coaching and provide feedback information relevant to coaching methodology to the coaches so that they can better help athletes' self-discovery and growth.

The analysis of coaching behavior provides a means to categorize and describe behaviors exhibited by a coach during practice sessions. One of its stated purposes is to provide information feedback to the coach about patterns of behavior displayed during coaching sessions in a descriptive and systematic manner to help the coach better understand what he is doing.

Smith (1978) points out that it is always, or almost always, the case that coaches intend to help the learners, but as in other situations in life, good intentions do not necessarily guarantee that efforts are, in fact, helpful. Coaches are often unaware of many of the behaviors they exhibit during coaching practices. A phenomenon which bears this out is that many coaches say, when they see themselves on films or videotapes, "Is that me?", "Did I really do that ?" Systematic coaching behavior feedback can be informative and useful to the coach, and form the basis for desirable behavior change.

Systematic observation of teaching behaviors has been a common practice in educational circles in North America for the last few decades. It is not difficult to find more than one hundred observational systems which serve the purposes of describing teacher behavior, and teacher-student interaction in classroom situations from relevant literature (Simon and Boyer, 1970). In sporting and physical education contexts, an increasing number of systems have also been developed for the purpose of describing coaching and/or teaching behaviors in the field of sports training and physical education teaching settings (Smith, 1978; Usher, 1977; Bond, 1979; Tharp and Gallimore, 1976; Darst, Langsdorf, Richardson, and Krahenbuhl, 1981; Lacy and Darst, 1985; Quarterman, 1980; Langsdorf, 1979; Rushall, 1977).

Evaluation of teaching behaviors of physical education for the purpose of assessing effectiveness in the People's

Republic of China has been a consistent practice for many years. Teacher behaviors are often analyzed and evaluated based on some established theoretical models. Such practices often include fairly general major dimensions like: attitude of the teacher, how well the teacher carried out the tasks planned for the session, behaviors and physiological (strength, endurance, agility, etc.) reactions and changes of the students, students' work load, and so forth. All of these tend to be evaluation-oriented rather than description-oriented. It should be pointed out that description (rather than evaluation) of teaching behaviors in a systematic and detailed way remains at a sporadic and inconsistent level although some description of teaching behavior is involved in the general evaluation.

Systematic observation of coaching behaviors in sports settings in the People's Republic of China, compared to the observation of teaching behaviors in physical education, is even more sporadic and inconsistent. Coaching effectiveness is often evaluated by such output measures as athletes' performance in competitions and/or the rate of progress in learning new skills. While these output measures are valuable in their own right, they do not provide a basis for planning changes in coaching behavior.

It seems that an observational system which describes coaching behavior in sports coaching in a systematic manner would be valuable for the further development of these activities in the Chinese culture. The development and validation of such a system will be the major purpose of this study.

The Problem

1. To what extent is the Coaching Behavior Observational System (CBOS) developed by Smith (1978) effective for describing the coaching behavior of Chinese coaches?
2. To the extent that it is not, what changes would improve its effectiveness?

Purposes of the Study

The purposes of the study are to develop and validate by expert opinion a Mandarin coaching behavior observational system based on CBOS to describe Chinese coaching behaviors. Such a system, the Mandarin Coaching Behavior Observational System (MCBOS), aims to provide objective information about coaching behaviors emitted by Chinese coaches during practice and instructional situations. More specifically, the objectives of the development of the system involve:

1. The development of the categories of MCBOS that are appropriate for describing coaching behaviors of the Chinese coaches based on CBOS;

2. The development of clear category definitions and ground rules as the basis for valid and reliable use of the system;

3. The generation of time related measures, behavior clusters, coaching style indices, and behavior sequences based on grouping and analyzing the data so as to make the observational data useful in describing present behaviors and guiding change.

Nature of the Study

A Conceptual or Critical Inquiry Study

Kerlinger (1969), writing in The Encyclopedia of Educational Research, makes a distinction between scientific inquiry and critical inquiry:

> Like scientific inquiry, critical inquiry is primarily concerned with the relations among phenomena. It is a general rubric that includes almost any kind of scholarly study and investigations. Scientific inquiry is one form of critical inquiry, its most powerful form. An educational investigation can be and should be critical inquiry, but it need not always be scientific inquiry. For example, the efficacy of a curriculum can always be studied by using critical inquiry when scientific inquiry might be impracticable, difficult, or impossible. (Kerlinger, 1969, p. 1129)

Coaching is a very complex process which involves many variables. During the course of coaching, the coach will exhibit many kinds of behavior. For example, some instructional behaviors may be displayed through such forms of instruction as explanation, question, request or order, demonstration, and organization; affective behaviors may be through encouragement, praise, rewards, hustle, and scold. Corrective behaviors may be generated through verbal and nonverbal feedback, and so forth. These behaviors comprise the bulk of coaching behavior. It is hypothesized that the quality of coaching behavior is influenced by many variables. For instance, the personality of the coach, methods of motivation, efficacy of leadership, style of communication, knowledge base, and understanding of the coaching role by the coach. These variables along with some others make the coaching process, as any group leadership situation, a very complicated phenomenon.

The goal of the present study is to organize existing understandings of coaching and to critically appraise existing concepts about coaching behavior to better understand the nature of the coaching role rather than to generate new knowledge per se. To understand the coach in the complicated processes and relationships that comprise this occupation is a task not suited to conventional scientific inquiry because of the many variables that are almost impossible to control. A more suitable method, then, would be what Kerlinger (1969) calls critical inquiry. That is, to conceptualize real coaching in a useful analytical way. Therefore, the present study is best described as critical inquiry research, that seeks to organize descriptively accurate information about real coaching in ways that will reveal new relationships and foster new understanding of the behaviors that characterize coaching.

Assumptions Underlying the Study

Some important assumptions that serve as the theoretical base for the development of the MCBOS:

1. Basic components of teaching/coaching (for example, instruction, monitor, and demonstration), are universal phenomena although cultural differences exist;

2. The existing literature on systematic observation of teaching/coaching practice in North America provides a valuable reference point and data base for the development of an observational system appropriate to the Chinese culture;

3. A comprehensive understanding of the nature of physical activity teaching and sports coaching ensures the necessary background knowledge for the development of a valid coaching observational system for use in sports settings. Such knowledge can be gained through careful study of relevant literature as well as actual personal experience in teaching physical activities and coaching sport events;

4. Many educators and educational psychologists share the concept that coaching is a form of teaching (Smith, 1978; Ryan, 1981). Coaching at an introductory level in particular is very similar to physical activity teaching. The deeper meanings assigned to the terms teacher and teaching are implied when the terms coach and coaching are used. However the terms coach and coaching will be used throughout this study.

5. In order to develop a valid system which fits the Chinese culture well, the data should be collected from the settings that are made as close to the real Chinese culture as possible when the attempt to generate data from actual Chinese coaching settings proves to be extremely difficult or impossible.

Limitations

1. The MCBOS, while in itself a research tool, cannot be used to evaluate coaches and coaching behaviors. Provided one accepted a rigid and comprehensive philosophy of coaching and theory of instruction, it would be possible to develop an evaluative component to the descriptive system

proposed, but this exercise would raise many very complex questions and is not a part of this study. In any event, the likelihood is that variability among coaches and athletes is so wide that reliable and valid evaluation may be virtually impossible, even when based on a clearly stated philosophy of coaching or teaching. The proposed system is descriptive rather than evaluative in nature;

2. The MCBOS is not directly concerned with the interaction between coach and athletes nor the effects of coaching behavior on athletes' attitudes. The sheer number of interactions between coach and athlete is so large as to make this task unmanageable. Although athletes' behavior and the interaction between coach and athletes are very important in coaching, these matters are extremely complex to analyze, and is therefore outside the scope of this study.

3. While the categories of MCBOS include all the salient coaching behavior, there may be behaviors that are not captured. The assumption is that any missed behaviors are not directly relevant to coaching effectiveness. In addition, some data will be missed due to the limitations of video recording.

Delimitations

1. The system deals with coaching behaviors of the coach. Any other aspects of a given session are outside of the concern of the system in order to make the present study manageable;

2. The system provides information about actual coaching behaviors rather than the intentions of the coach. Intentions of the coach are covert and cannot be detected except by inference or extensive de-briefing.

3. Coaching behavior of regular coaching sessions was recorded through a video recording system which is capable of recording the vast majority, but not all, the verbal and non-verbal behaviors of the coach and the context in which the coach was working.

4. The judgement of at least of five (5) experts was used to validate the MCBOS. In order to qualify as an expert for this study, a person must a) be a native Chinese and Mandarin language user who has had direct experiences of the Chinese culture; and b) have at least five (5) years experience of both/either coaching a particular sport in China and/or competing as an athlete of elite level (national sports competitions) in a particular sport in China, or have gained at least a masters' degree of physical education specializing in coaching and physical education related studies.

Definition of Terms

1. Coach: the individual who has the authority to plan the practice regimen, instruct and correct, decide on tactics and strategy, and select and place personnel in a sport specific environment.

2. Coaching behavior: any observable behavior emitted by a coach during a coaching session.

3. Coaching behavior category: a behavioral sequence that is emitted periodically and is considered to have significant influence in guiding and controlling behavior or promoting effective learning and performance of the athlete participants.

4. Expert: A person who has had extensive experiences (five years or more) of athletic training and/or physical education related studies in the Chinese culture, and who offers comments to validate categories and ground rules of the MCBOS.

CHAPTER II

REVIEW OF THE RELEVANT LITERATURE

The Relationship Between Teaching And Coaching

What do we understand by the use of the concept of teaching? In a broad sense, teaching takes place in different forms in our every day life as well as within formal classroom settings. Some of the many examples can be illustrated by the manner in which a biomechanical teacher teaches students the concept of gravity; the way in which a teacher of history structures a learning environment to provide an understanding of a historical incidence; the act of a parent who teaches a child to use a vacuum cleaner; the sequence of actions of a coach who instructs a youngster to shoot a basketball through a hoop fastened to a frame several feet above the ground; or even the way in which a wife teaches her spouse to play bridge. All of these frames of reference involve some sort of teaching despite the fact that they happen in different contexts and involve different activities ranging from explaining, thinking, memorizing, to the use of motor memory in acts of motor performance. It is believed that in order to grasp the concept of teaching, an analysis of the essential requirements that are "attached" to the concept is useful.

In analyzing the features of teaching, Fenstermacher (1986) suggests that in order to ensure that a particular activity can be labelled "teaching", the following conditions must be satisfied: (a) at least two people must be involved in the activity; (b) one of the two must be in possession of a range of attributes extending from knowledge, understanding, and skills to beliefs, emotions, and traits of character (Fenstermacher uses the word content [C] to stand for these attributes), of which the other is lacking; (c) the person who is in possession of C (possessor, P) intends to convey C to the other person (receiver, R) through particular way; and (d) there is an imbalance between P and R concerning C. The relationship begins with R lacking C and presumably ends with R in possession of C.

To apply the above definition to the example of a youngster learning to shoot a ball through a hoop, it is seen that the youngster begins as ignorant of C. The coach knows how to shoot the ball in a certain way, and conveys this knowledge to the youngster, such that there is no longer an imbalance between P and R with regard to C. This example seems to fit the above definition very well. And so would the other examples set in the first paragraph if they were analyzed in the same manner. These conditions may be seen necessary attributes in terms of defining the concept of teaching in a sense that any activity would not be labelled as "teaching" if any one of the conditions (central features in Fenstermacher's terminology) were missing.

What are the central features of coaching? It is understood that it should be known, in a literal sense, what coaching includes before the central features of coaching are identified. Webster (1986) defines coaching as "the act of training intensively by detailed instruction, frequent demonstration, and repeated practice" (p. 431). The word "instruction" implies that there are at least two people engaged in this particular activity, one of whom must be the P (coach in this case) and the other must be the R (athlete in this case). "Frequent demonstration" suggests that the coach either demonstrates, on a regular basis, a particular skill or a game strategy (C) or has the C demonstrated by someone else so that the R has an actual visual image of the C. "Repeated practice" is always done by the R. Through the process of instruction, demonstration, and practice, the R presumably acquires the C at a level which exceeds the initial level of C.

The above analysis indicates that teaching and coaching are similar in terms of their central features. In fact, there are a number of important similarities between classroom teaching and coaching on the field. In both activities a great premium is placed on achieving a clear and interesting presentation of a body of knowledge. And both are educational in nature. Many scholars argue that coaching is a special form of teaching (Smith, 1978; Ryan, 1981). The idea of an essential compatibility between the concepts of teaching and coaching provides the rationale, to a certain extent, that the rich, existing literature of research on teaching can play an important role in providing good references for research on coaching.

However, it should be pointed out that although both classroom teaching and field coaching are educational in nature and share the same central features (as Fenstermacher has identified), there exist some significant differences between these two with regard to the focus and the forms of engagement.

The key element wherein field coaching differs from classroom teaching is that coaching involves a change of motor habits and prepares athletes for competitive performance under strictly controlled conditions, while teaching usually prepares one to use knowledge and skills under a very wide range of conditions. This change has to be firmly established through constant instruction, demonstration by the coach, and an excess of physical practice of the motor skills by the athlete. Classroom teaching seldom requires this.

In summary, coaching is educational in nature and focuses on the development of competence, and for some, the pursuit of excellence. Teaching is the process of helping learners to acquire a body of new knowledge, new physical skills or techniques, and new attitudes. So is coaching. Coaching is a special form of teaching although it differs from teaching in its focus and forms of engagement. The shared nature of teaching and coaching provides the rationale that the existing literature of research on teaching can be useful resources and references for the research on coaching if the focus of research on coaching is compatible to that of teaching.

Systematic Observation and Purposes of Observational Studies

We largely depend on the proper functioning of our sense organs to gather the information about what is happening around us. Such functioning is sometimes tacit, at other times more deliberate and systematic depending on the situation and purpose of the person involved in the process. In daily life people make observations, not to answer specific questions, but to establish, maintain, check, suspend, and participate in coping with the demands of everyday events (Blumer, 1969). However, more deliberate and systematic observations are required to answer stated question(s) (e.g., problems/questions of research projects). The process of such observations can be explicated and must be conscious so that others may assess the adequacy of answers obtained and to understand the process(es) by which the answers are assembled (Evertson and Green, 1986). These scholars call the strategies we adopt to get information "part of the psychology of perception" (p. 163). Of interest to this study is the more deliberate and systematic part of the psychology of perception. The term systematic observation will be used consistently to refer to the conscious process that involves deliberate and systematic observation.

In the discussion of functions and definition of systematic observation, Darst, Mancini, and Zakrajsek (1983) stated that "systematic observation allows a trained person following stated guidelines and procedures to observe, record, and analyze interactions with the assurance that others viewing the same sequence of events would agree with his or her recorded data" (p. 6). According to this statement, systematic observation involves observing, recording and analyzing so that there is a high degree of reliability between two or more observers. In a general sense, the fundamental purpose of observing and recording is to set favourite conditions for analyzing so that useful information can be generated to help teachers/coaches enhance the quality of their engagement. This relationship spells out the importance of analysis in observational studies.

Based on Rosenshine and Furst's (1973) classification of observational studies in terms of their general purposes, Bond (1979) summarized the practice of observational studies in relation to their main purposes in the areas of teaching and coaching. They are briefly described as follows:

1. To describe current practice. For example, concern might lie in describing variability in behavior over time for the same individual, between individuals and situations, or in describing characteristic behaviors of superior coaches or teachers (Rosenshine and Furst, 1973; Smith, 1978). In these studies, description is the predominant purpose. This type of research is intended to provide a set of concepts and some baseline data on teaching in natural settings.

2. To train teachers or coaches to learn to identify and describe fundamental behaviors and the ways in which these are combined or patterned (Smith, 1978; Smith et al., 1978). In teacher-training situations observational systems are used in one or more of three ways: 1) to provide a teacher with feedback on his/her behavior, 2) to give a teacher a set of procedures by which to categorize instructional activities, and 3) to provide a teacher with behaviors and activities which he/she can model during instruction (Rosenshine and Furst, 1973).

3. To monitor instructional programs (Smith, 1974; Smith et al., 1978). The use of observational instruments to monitor instruction is to determine whether the intentions of the program developer are being implemented. These instruments can yield program-specific information which can be used to revise the operation of the program to conform to the intentions of developers. According to Rosenshine and Furst (1973), monitoring information is useful in two ways. One is to determine the extent to which the variables considered important for implementation are related to measures of student growth. A second is to determine significant differences in student growth between programs which are well implemented and comparison situations.

4. To investigate relationships between classroom or coaching activities and measures of participant growth (Rosenshine and Furst, 1973). For example, the purpose is to gather some objective information concerning teacher-pupil behaviors which relate to pupil creative growth. The often used method for the research of this kind is correlational studies on teaching behavior and student achievement.

It is understood that the above mentioned concepts such as description, identification, intention, and objectivity are critical issues in terms of the framework for developing an observational system of current interest. These issues will be discussed in a later part of this review of literature.

A more general classification by van der Mars (1989) categorizes the major use of systematic observational instruments in observational studies into two different but related arenas: research and supervision in which functions are fulfilled through various ways. As a part of research projects, systematic observation provides information on both independent and dependent variables. For example, much of the research aimed at changing teaching behaviors used feedback as part of the intervention, and this feedback was typically based on data collected through systematic observation. Verification of behavior changes as a result of these interventions was also established through such data collection procedures.

In the arena of supervision process, as van der Mars (1989, p. 8) noted, supervision can serve a variety of purposes. It plays a role in: (a) administrative decisions in public schools regarding the retention of teachers; (b) staff development programs in public schools aimed at improving teachers' instructional effectiveness; (c) a cooperative effort among teachers to guide new, inexperienced student teachers during their internships; and (d) the university supervisor's contributions in that same setting. He stated that the specific use of systematic observation and the information it provides differs depending on the supervisory setting in which it is used.

Scholars generally agree that different purposes involved in the observation lead to differences in strategies, levels of systematization, and levels of formality for observation. More specifically, the purpose of the observation influences what is observed, how it is observed, when observation takes place, where it takes place, how observations are recorded, how data are analyzed, and how data are used. In addition, factors such as theory, beliefs, assumptions and/or past experiences of the person who is doing the observation play a role in forming the frame of reference of the observer, which in turn influence the purpose, design, and implementation as well as the process of the observation (e.g., Dunkin & Biddle, 1974; Fassnacht, 1982; Power, 1977; Shulman, 1981). As a consequence, selectivity becomes an inevitable characteristic with respect to a decision to use a particular tool, representational system, or program of research. It is not possible to record all aspects of reality with any given system or tool or within any single research project.

It should be noted that, like any other useful research methods, systematic observation does have some crucial limitations. According to van der Mars (1989), four major limitations go with the method. First and foremost, it concentrates only on observable events and behaviors; that is, only those events that can be detected visually and/or audibly are measured. This requires great care in developing proper definitions of the behaviors to be studied. However, it should be clearly understood that this limitation does not necessarily indicate the inability of systematic observation to yield any information about such aspects as attitudes, emotions, and feelings of teachers/coaches and students/athletes or such constructs as class/team climate in light of its focus on only observable events. On the contrary, it is assumed that attitudes and feelings are somehow reflected in observable behavior that can be categorized and defined. It is a fact that we often assess the attitudes of others toward something according to his or her consistent observable behavior, not according to his or her stated words. In coaching settings, for example, the attitude of an athlete toward practice might be reflected in his or her on-time behavior, the amount of time he or she spends taking extra practice and so on. Although these and other behaviors may not say much about that person's general attitude, they function as indicators of his or her attitude toward practice.

Second, when used appropriately and reliably, systematic observation produces only descriptive information that is relatively objective. The data themselves do not provide the means to evaluate how well or poorly the teacher or coach performed, rather they provide the information for judgments to be made later. This is important and useful because the use of specific coding rules and procedures in systematic observation forces the observer to first describe the events as accurately as possible (as oppose to the tendency of making evaluative or judgmental notes which tend superimpose the observer's own beliefs and biases on what he or she sees happening in traditional informal analysis, i.e., eyeball observation) and then, based on that descriptive data, make some suggestions for improvement where necessary or reinforce the existing level of performance.

A third limitation is that descriptive data themselves cannot give prescriptions as to what a practitioner could (or should) change. Hawkins, Wiegand, and Landin (1985) recently reported that there is some evidence that data-based feedback consists largely of reporting to the teachers what happened to them during the observation (much like Knowledge of Results [KR]). Efforts need to be made to understand the content of the feedback and the relationship between teacher/coach's behavior and student/athlete's subsequent behavior. These efforts should produce a better understanding of how objective, descriptive data need to be treated in the supervisory process of (new) teachers.

Fourth, findings obtained through systematic observation are always contextual. In other words, the feedback offered to the teacher/coach needs to be considered in light of the situation in which it was observed. This is simply because the same behavior may carry different meaning in different teaching/coaching settings, to different students/athletes. For example, a nod of head by the coach when used as performance feedback to athletes may be interpreted as praise by athlete A, as performance confirmation by athlete B, and as no meaning by athlete C.

In short, systematic observation is a conscious, deliberate and systematic process that involves observing, recording and analyzing. Although this method has some crucial limitations like any other useful research method does, it can produce useful information, when appropriately used, to enhance the quality of teaching and/or coaching. Since the primary interest of the current study is to develop a system appropriate for describing coaching behaviors of Chinese coaches, a number of issues that are directly related to the development of observational systems should be considered. A discussion of these issues will be the topics of the section that follows.

Issues Related To the Development Of Instrument

In this section, the following topics will be discussed: (a) the nature of classification, definition and criteria for "good" classification; (b) types of observational systems; (c) principles that guide the development of units and types of units in category systems; (d) some essential features of category systems; (e) methods of development of units; and (f) reliability and validity.

The Nature of Classification, Definition and Criteria for "Good" Classification

The process of identifying coaching behaviors is also a process of classification, that is, a systematized method of assigning observed behaviors to different behavioral blocks according to certain criteria or principles. Classification, as Glassford (1970) described, is "in its simplest form, the putting together of like things. More specifically, it is the arranging of things according to likeness and unlikeness" (p. 73). In actual classification, according Glassford, it is "likeness" rather than "unlikeness" that is responsible for classifying things because "likeness predominates, whereas unlikeness is merely what is left over when likeness has been defined" (p. 73). A similar definition formulated by Herdman (1934) states that "Classification is a separating process as well as a grouping process, and the characteristic by which we separate and group determines the kind of classification" (p. 2). This definition suggests that the framework of a system determines the way of classification, an issue that will be discussed later in this chapter. After careful review of the definitions of this term from related literature, Glassford concluded:

> In summary, the essential aspect of classification is that it permits the arrangement of the "things" in question into a scheme, and this scheme in turn provides us with a meaningful mental image or map of

the total situation. (p. 75)

By "things", Glassford simply meant the subject for classification.

Having reviewed the concept of classification and its definition, it is now ready to examine the criteria considered essential for a good classification system.

Based on his careful review of several noted authors who had studied in depth the concept of classification, Glassford (1970) put together the following eight criteria of a "good" classification system. They were:

1. Exclusiveness. Each class should be mutually exclusive with any other class at the same level of analysis. What goes into one class must be thereby excluded from the others. No two characteristics should be concomitant.
2. Exhaustiveness. Any given set of classes should be totally exhaustive of their field. If "things" under consideration cannot be classified into one of the given classes there is a danger that the system is inherently inadequate.
3. Differentiation. Each characteristic should be an attribute that differentiates at least two classes
4. Ascertainability. Every characteristic in a classification scheme must be easily ascertainable by any user. This criterion is related to the one below.
5. Unambiguity (meaningful terminology). The terms used in a scheme should, wherever possible, be those in current use among individuals who specialize in the field. The meaning of each term should be carefully defined so that the problem of ambiguity is minimized.
6. Relevance. All characteristics chosen should be relevant to the purpose of the classification.
7. Exactness. Each stage of classification should be carried out in as much minute detail as possible. The dividing process must be gradual such that the smallest amount of difference possible is used at each stage or level of differentiation.
8. Usefulness. The obvious measure of a "good" classification system is the extent to which it is used by scholars, students and others who are familiar with the field of knowledge for which the classification scheme was devised.

Adherence to the first seven of these criteria will enhance immeasurably the eighth, utility. With these criteria, the commonly concerned issues of classification such as exclusiveness, completeness, clarity, relevance, and usefulness are all under consideration. They are important because they help to ensure that the system developed is valid and reliable and consequently effective for the purpose designed. They are useful check points for evaluating the categories of the MCBOS, and, hopefully, will help produce a more standardized analysis of the observations of the coaching behaviors of the current study.

Types of Observational Systems

Rosenshine and Furst (1973) sorted hundreds of observational systems/instruments that were used in educational settings into three main types: category systems, sign systems, and rating systems. They then distinguished these types through the following characteristics.

Traditionally, rating systems were characterized by the inclusion of high inference items which may be conceived of as broad or global items requiring much inference by the observer, while category systems and sign systems typically contained low inference or specific items. An example of a high inference item is a rating of overall teacher effectiveness, while that of a low inference item is the coding of behavior associated with the teacher giving directions.

In terms of recording procedures, category systems record an event each time it occurs. However, sign systems record an event only once within a specified time period, regardless of how often it occurs during that period. With rating system, the observer estimates the frequency of specified events only once, usually at the end of an observational session.

Finally, the differences between these types of systems could also be found in the format of coding from simple uni-dimensional to multi-dimensional coding, which means that each segment of teacher/coach is coded several times, once per dimension. In some category systems, a particular event might be coded in several different dimensions. For example, the category of instruct in CBOS (Smith, 1978) was further divided by Bond (1979) into six sub-categories or dimensions. They were: command, order, direct; lecture, explain, expand; request; question, implied question; response to player question; and confirmation feedback.

A more recent classification made by Evertson and Green (1986) sorted the observational systems into four classes. They were categorical systems, descriptive systems, narrative systems, and technological systems. Each class of these systems can be identified by a unique set of characteristics and presented as follows:

Category systems always have preset, well-defined categories, that are mutually exclusive and defined in advance to reflect philosophical, theoretical, empirically derived, or experience-based beliefs about the nature of the process and events under study. Data from these systems are recorded live in general. That is, observed behaviors are recorded on the coding forms as they occur, either as ratings at the end of a set period of time, as numeric symbols for the behavior observed (e.g., 3 represents 'instruction'; cf. Smith, 1978), or as a tally on a checklist. Each behavior is generally recorded in only one category. The goals of these systems are, according to Evertson and Green (1986), to study a wide range of classrooms to obtain normative data, identify principles of teaching which might be generalized across cases.

Descriptive systems may have preset categories, but they may also yield categories which are generated by the data. A retrospective approach is used to analyze specific aspects of the total recording. The period of observation may vary in length ranging from minutes to hours, however, data are recorded within naturally occurring boundaries of events or context. The meaning of behavior is viewed as context specific. These systems are used to obtain detailed descriptions of observed phenomena, to explain unfolding processes, to identify generic principles from explorations of specific situations, and to generalize within cases as well as compare findings across cases.

Narrative systems have no preset categories and descriptions are recorded using spoken or written language. The recordings can be made live, as in the case of critical incident records, or can be reflective, as in the case of diaries or journal records. The systems of this type are intended to obtain detailed descriptions of observed phenomena, to understand specific case and to compare findings across cases.

Technological records are live recordings of events, processes, and groups through devices that make permanent records (e.g., videotapes, audiotapes). This method can be used in combination with any other systems to obtain a permanent record of an event to be recorded. The purpose is to freeze the event in time for analysis at a later point in time.

As Evertson and Green (1986) indicated that the key is not which of above discussed systems is best but which is most suited for the question under study and which will adequately represent the segment of reality being observed. This is an important point because it is obvious that different systems will record a different segment of reality, obtain a different level and type of description of the observed phenomena to store the information in different forms, and then permit the retrieval of different types of information. Since the purpose of current study is to develop and validate a category system, it is appropriate that further discussion on the features of category systems is in need.

Principles that Guide the Development of Units and Types of Units in Category Systems

The choice of units depends on the theoretical, philosophical, or experience basis of the framework that guides the observational study (Dunkin & Biddle, 1974). This statement highlights how the selection of units is a central issue in observational research. It also emphasizes the relationship between the choice of unit and the framework guiding the study as well as the relationship between the choice of unit and the nature of the description obtained.

Different frameworks require and lead to different units which in turn constrain what can be reported. In other words, the relationships between and among units, as specified by the framework guiding the systems, make up the grammar of the system. They determine what can be described and which aspects of the phenomena are described (Evertson and Green, 1986). Fassnacht (1982) captures the issues succinctly:

> Decisions about units are of great importance insofar as they establish principles with regard to the statements that can be made about a topic before anything has been discovered about it. By deciding on certain units, the nature of the relationships that can subsequently be discovered is defined. One can neither discover nor construct anything beyond the limits imposed by these units. The unit defines, so to speak, the intellectual limits of possible statements and only allows relationships within the context. (p. 57)

Therefore, the development of units or categories of a categorical observational system is the key issue in developing a valid and reliable categorical observational system.

Fassnacht (1982), in an extensive study on observation theory and practice, presented nineteen different units that were identified by him as well as several others (e.g., Brannigan & Humphries, 1972; Barker & Wright, 1955; Emmer & Peck, 1973; Richards & Bernal, 1972). The units were based on different approaches, that is, they were emerged depending on whether they were based on their structural or functional aspects, their content or the way they were collected, their purpose or their relationship with other behaviors (p. 76). A review of complete list of the nineteen units can be found in Appendix 1.

In examining the usage of units from existing literature, Evertson and Green (1986) found that in general, not all the units presented by Fassnacht were used in category systems. Rather, some categories tended to be used more often than other units of observation for category systems. For example, units in category systems generally reflect a behavioral stance. That is, dynamic, temporal configurations are perceived as behavior units. Units within category systems were also discrete units and simple units, which constrain that each behavior observed is coded in only one category. In addition, the units within these systems reflected only directly observable behaviors. It is understood that these units have been used because of their nature which is compatible to the framework for category systems that often involves objective, consistent, and descriptive analyses.

Some Essential Features of Category Systems

Based on the above review, a question should be asked: What types of behavioral units should be used in the MCBOS? In order to ensure that the categories of MCBOS work in such a way that they generate useful and meaningful information to meet the need of the study, that is, objective description of coaching behavior, it seems that the following principles may be appropriate.

Categories Must Be Operationally Defined

Definitions of categories can be operationally made in various ways to meet the specific needs or interests. For instance, focus of attention can be on either student/athlete behavior, and/or the teacher/coach behavior only, or the interaction between teacher/coach and students/athletes. However, one thing must be in common to all category systems regardless of the focus of interest. That is, the definitions of categories must be made in such a way that categories are mutually exclusive to one another. The significance of this requirement is that boundaries between different categories can be clearly set so that observed behaviors are clearly classified and grouped in meaningful ways (e.g., Simon and Boyer, 1974; Martin, 1976; Smith, 1978; Cartwright and Cartwright, 1984). Categories should also be defined so as to permit the researcher to record directly observable behaviors rather than hypothetical constructs. The theoretical consideration behind this is that two key characteristics of information generated by observational systems is that they are objective and descriptive. This nature determines that only observable behaviors are focused upon and recorded. Intentions of behavior are covert and cannot be detected except by inference (Smith, 1978; Martin, 1976; Bond, 1979; Anderson, 1980). However, inference can not guarantee to reflect the nature of being objective. Therefore, inference should be avoided. The adequacy of this definition is also related to the reliability of observation, an issue that is so important that deserves a separate section to discuss.

Categories Must Be Functional in Nature

Smith (1978) and Martin (1976) made an excellent point on the nature of categories by saying that categories must be functional in nature because "the meaning of behavior resides in the dynamic relationship with subsequent events rather than in the static structure of the behavioral act per se" (Smith, 1978, P. 45). Martin (1976) made the same point and stated that categories must be functional and have the status of intervening variables that capture the important elements of the communication under study rather than hypothetical constructs that are inferred by the researcher. That is to say we should identify behaviors on the basis of their effects, (i.e., what happens after they are displayed) rather than their so-called formal structure. This principle has been accepted by many category system developers (e.g., Bond, 1979; Quarterman, 1980; Tharp & Gallimore, 1976). Thus, in actual situations of teaching or coaching, a nod of head, a pat on the back, a warm smile, and the phrase "good job!", are each separately seen to have the effect of increasing effort and perseverance of the behavior. Then they can sensibly be grouped together as rewarding to participants. Another way to support the argument is that in the intercourse of communication, there are variety of ways available for us to convey our intended meanings. For example, we can express our negative emotions by verbal statements such as "I really don't like that", "Why the hell did you do that!", or nonverbal behaviors such as stamping the feet in disgust; a quick movement of the hands to the hips; a threatened or actual kick, punch, choking, or slashing action. All these are behaviors with different formal structures, but they convey the same functional message - negative aspects of emotion. Also, at times one single formal structure can carry different meanings. For example, the calling of an athlete's first name by the coach is a behavior based on the formal structure (calling the names of athletes), which can carry several different meanings with different tone of voice, and/or facial expressions. These messages can be either positive, negative, or neutral. In the practice of analyzing coaching behaviors, an area in which we are interested is the potential influence of the coach's behavior on his/her athletes. We would not get much meaningful information out of a classification of behaviors if we identify behavior solely according its formal structure because it can deliver different meanings in different situations. Therefore, our unit structure (or category system) must take account of this set of factors. Another one of many more examples is that a smile by a coach after he/she has seen athlete's performance may be interpreted by athlete A as praise if the coach seldom smiles to him/her, but may not have any effect on student/athlete B if the coach often smiles to him/her.

In the case of later, "smiling" might be interpreted by the athlete as one of the personality characteristics of the coach and the "supposed effect" is faded out due to abundant use.

Categories Must Be Descriptive Rather Than Evaluative

This is the nature of category systems that is determined by the purpose of describing teaching/coaching phenomenon. Although observational studies may, at times, involve some evaluative components which are often implied in the organized data about how well the teacher/coach did as opposed to some established theoretical standards, categories themselves must be descriptive rather than evaluative in nature because data generated from the categories must be descriptive in order that the requirement of objectivity can be satisfied. As research tools, category systems are to provide objective feedback information to describe the phenomenon of interest. However, evaluation almost always goes with some degree of subjectivity or inference. If the feedback information is evaluative rather than descriptive in nature, it simply reduces its descriptive power, and is consequently not as convincing to the information receiver as it should be.

Number of Categories in a System

One notable fact is that among the existing systems in the related literature, the number of categories may differ dramatically across systems, ranging from as few as 6-7 categories in one system to as high as more than 30 categories in another. One of the possible reasons responsible for this phenomenon might be that, as discussed previously, different systems serve different specific purposes and fulfil different needs of research studies. Because of this difference, some systems may include high number of categories that allow many fine distinctions while others have low number of categories that only yield fairly general information. This is understandable and acceptable. Unfortunately, in practice, a noted phenomenon is that some systems are too global to yield meaningful information while others too cumbersome and to learn to apply although they may generate many fine distinctions. For example, Smith, (1978) in analyzing a system that included 20 categories, found that three of the categories accounted for almost 69% of all the observed behaviors, while eight other categories each accounted for 1% or less, and another five categories each accounted for 2% or less. These percentiles indicated that thirteen of the twenty categories, 65% of them, described only 11.25% of the behaviors displayed by the coach under study, and brought insight that some behaviors of certain types (e.g., instructional behaviors) occur a lot more frequently than others. Consequently, Smith pointed out the necessity of striking a balance within a system which permits one to make distinctions between different types of behavior and yet which are relatively easy to learn to apply as well. He noted:

> It is necessary to strike a balance between a small number of categories that are so general as to provide no useful information, and a large number of categories that allow for many fine distinctions but are cumbersome to use, very difficult to learn to apply, and pile up masses of data even from the examination or analysis of short episodes. (p. 39)

Smith solved this problem by developing a ten category system that obviously he believed appropriate for a category system. This solution has also been supported by the fact that many systems have between 8 and 15 categories. In the attempt to seek supportive data for an appropriate number of a category system, the researcher has examined 30 published category systems that have been used in physical education and sports coaching situations, and has found 60% have categories somewhere between 9 and 14; 10% have 8 or less; and 30% have 15 and more categories.

An effective way employed by Smith (1978) to devise categories and maintain their number at manageable level is to identify only simple categories as opposed to some combined categories in other systems. For example, the combined category of scold/reinstruction has been included in the systems developed by Tharp and Gallimore (1976), Darst et al. (1981), and Langsdorf (1979). While it is obvious that this sequential behavior pattern occurs frequently in actual coaching situations, the frequency of other sequential patterns of behavior might also be at a notable level depending on the coaching situations and characteristics of different coaches. For instance, hustle followed by praise (hustle/praise), monitor followed by praise (monitor/praise), monitor followed by corrective feedback (monitor/corrective feedback). If we were to include all these sequential aspects of behavior in categories, the system would be too cumbersome to use, as consequence, fail to meet the parsimony standard for an observational system. However, if these patterns could not be reflected by a system, the system would lose much of the practical power for valid and reliable use. Smith (1978) has solved this problem successfully with the CBOS. What he did was to build a behavioral matrix to reflect all kinds of sequential aspects of behavior (refer to the the section of Sequential Aspects of Coaching Behavior of Chapter 3 for a detailed description of the matrix). There are at least two advantages to using the behavioral matrix. One is the inclusion of simple categories within the system so that overlapping between categories can be avoided to keep the number of categories at lower level and still yield same information. An example of such overlapping would be scold/reinstruct as an independent category besides the categories of scold, and instruct. The other is that all the sequential aspects of behavioral patterns can be reflected. This is an important feature because characteristics of coaching behavior are often presented through sequential patterns of behavior.

The Role of Ground Rules in a Category System

Another feature of category systems is that many systems have ground rules. Smith (1978) addressed the importance and role of "ground" rules which a category system should possess:

> As with many observation systems it is necessary to outline a set of ground rules to set standard conditions for observing behaviors and to provide some formal rules to use in assigning ambiguous behaviors to the most appropriate category. (p. 5)

The major reason for the development of ground rules for use with an observational system is that as research tools, category systems intend to provide information for objectively describing behaviors of a particular interest. In practice, a category system will be used by researchers who may have different rules as well as standards in terms of assigning observed behavior to categories. The role of ground rules is to ensure that the category system is objective, consistent in assigning ambiguous behavior to most appropriate categories. Without ground rules, it is very possible that different researchers will obtain different results for a given behavior because of different understandings, rules and standards for the assessment of each of the behaviors. If so, this would dramatically change the descriptive nature of behavior observational system. When the accuracy of describing behavior within a behavior observational system is low, its value of usage is greatly reduced.

Specifically, in actual situations, researchers will inevitably encounter behaviors that are ambiguous with respect to their assignment to categories. For example, in situations of coaching, coaches will offer explanations of particular skills. As with the CBOS (Smith, 1978), for example, if the explanation is followed by a detection of mistakes of performance of a previously instructed skill, the behavior should be assigned to the category of corrective feedback. However, if the explanation is given to the athlete(s) without having given him/her previous instruction, then such behavior should be assigned to the category of instruction. Without this rule, it would be difficult for some ambiguous behaviors to be assigned to the appropriate categories. Furthermore, ground rules can be used to standardize the manner of recording. Examples are: rules of assigning a behavior to a category according to its real effect, that is, depending on the observed effect of the behavior it may be placed in one category in one context and in another category in a different context; and rules about the method of coding, for instance, to code behaviors in every five second intervals. These obviously important functions of ground rules make them a necessary component of a category system.

A final feature of category system that will be discussed is the inclusion of some useful tools for organizing data so that they can provide meaningful feedback to the teachers/coaches being observed. Since this issue requires relatively extensive discussion, it will be dealt with in a separate section.

Methods of Development of Units

In terms of the process of unit identification, according to Evertson and Green (1986), a deductive method was generally used, that is, the units were generally derived from theory, hypotheses, logical propositions, or findings form previous research in the area. This integral part of classifying has been in considerable use in order to "...capitalize on them and to avoid wasted effort in searching for answers already available" (Smith, 1978, p. 38). Martin (1976), in speaking about the instrument developer, also stated:

> The greater his deductions coincide with the inductive work of others in the chosen area of investigation, the less likely a category constructor will waste his time 'reinventing the wheel'. (p. 9)

However, there is no theoretical or conceptual base that says units for a category system could not be generated inductively. This is to say that the units could be derived by analyzing data of an earlier study or of a current study (e.g., behavioral patterns that emerge from a videotape or an audiotape). This method is known as content analysis. An advantage of such inductive work is that it can guard against selective perception and associated distortion of reality. When deductive categories can not cover all of the observations under study, content analysis may be an effective way to find out what the deductive categories can not cover, so that the criterion of exhaustiveness can be met. For the present system both deductive and inductive methods are used to insure the exhaustive nature of the categories. Specifically, units are derived based on the analysis of other category systems as well as the CBOS (Smith, 1978) and the analysis of behavioral patterns directly from videotapes of Mandarin coaching sessions.

Reliability and Validity

Introduction

Reliability and validity are two important concepts in scientific research. In general, they are used to assess and estimate the degree to which the results of scientific studies can be trusted. In the context of observational studies, two elements are generally concerned about valid and reliable treatment of data: accuracy and observer agreement. The former is related to issues of validity (accurate representation of reality) while the later is related to reliability (consistent assessment). These two features broadly described by Kazdin (1977) are as follows. Accuracy refers to the extent to which the observations scored by an observer match those of a predetermined standard for the same data. Observer agreement, by its name, refers to the degree to which independent or repeated assessment of observed data, agrees one to another. There are two types of observer agreement procedures. Inter-observer agreement between observers who independently code the same behavior of the same subject indicates the degree to which both (all) observers agree on what they see and record based on the interpretation of the category definitions and ground rules. Intra-observer agreement refers to the situation in which one observer makes an observation of events on one day and then comes back at a later point in time to observe the same events. The data are compared to determine the degree to which the two observations agree. This, of course, necessitates the use of a permanent recording of observed data (for example, video- and/or audio-taped records of the subject's behavior which can be coded as many times as required to measure intra-observer stability).

Issues of Reliability

Inter-observer agreement is generally used for the assessment of reliability for observational studies (Johnson and Bolstad, 1973; Hawkins and Dotson, 1975; Kazdin, 1977; Bond, 1979; Siedentop, 1983). When this is done, as Siedentop (1983) suggests, the term independent observers can be taken to mean that one observer could not detect recordings being made by another observer. This criterion is usually satisfied by having observers placed far enough apart so that no visual or auditory cues can be used to detect the observations being made.

One general formula for computing reliability is

$$\frac{\text{Agreements}}{\text{Agreement + Disagreements}} \text{ X } 100 = \% \text{ of agreement}$$

For event recording, a recording method based on behavior occurrence that has been used by CBOS and many other category systems, and will be used by MCBOS as well, reliability can be calculated by dividing the data of the observer who has the lower number of instances by that of the observer who has the higher number of instances. For example, if the number of instructional behaviors that a coach has during a period is recorded, and one observer records 14 while a second observer records 12, the reliability would be computed as follows:

$$\frac{12}{14} \text{ X } 100 = 86\% \text{ agreement}$$

This result shows a 86% inter-observer agreement. In behavioral observation research, using inter-observer agreement calculation techniques, a criterion of minimum 80 percent is generally acceptable as reliable assessment (Bond, 1979; Siedentop, 1983).

In terms of statistic treatment of data in observational studies, one of widely used and recommended methods of calculating agreement coefficient with nominal data has been Scott's (1955) coefficient (Bond, 1979; Hollenbeck, 1978; van der Mars, 1989). Flanders (1967) stated:

> Scott's method is unaffected by low frequencies, can be adapted to percent figures, can be estimated more rapidly in the field, and is more sensitive at higher levels of reliability (p. 161)

Based on their review of related literature, Evertson and Green (1986) presented a series of questions and answers to clarify issues of observer agreement. A brief summary of the answers to their related questions is presented below in a way that each question precedes its answer:

When should observer agreement be measured?

Observer agreement should be measured prior to data collection. However, calculations of the degree to which observer disagreement limits reliability should be done after the study. It is important to note that the training of observers does not guarantee against observer skill deterioration as data collection proceeds.

On what kinds of data should observer agreement be calculated?

Observer agreement should be calculated on the same units of behavior that will be used in the data analysis, and on subcategories of behavior as well as the larger, subsuming categories.

With whom should agreement be obtained?

Observers' scores should be compared with a predetermined criterion to ensure the accuracy because high inter-observer agreement may not mean agreement with the original categories. Systematic misinterpretations can exist even with high agreement. This criterion points out clearly the importance of well-defined categories and ground rules to set standardized conditions for recording.

Under what conditions should agreement be calculated?

All ways to heighten observer vigilance and maintain accountability should be considered. Coding in the actual setting may differ from coding of unambiguous samples in a laboratory or training session.

How can agreement be measured?

Be aware that the drawbacks of simple percentage agreement are that low frequencies in some categories and high frequencies in others may make interpretations ambiguous.

Evertson and Green concluded that the forgoing discussion of reliability can be thought of as a framework or set of guidelines for finding appropriate ways to determine reliability. That is, the questions and the related issues that were raised can guide the researcher in designing, selecting, and applying appropriate measures of reliability.

It was pointed out previously that although inter-observer agreement has been commonly used to assess the reliability of measurement in observational studies, it does not, by itself, assess observer accuracy unless a previously established standard is used, and does not assess stability unless it is measured over repeated trials (Bond, 1979; Evertson & Green, 1986; van der Mars, 1989). It is possible to obtain high inter-observer agreement with close to zero reliability in terms of accuracy and stability in the sense that a test can not be reliable if its validity is low. Johnson and Bolstad (1973) noted that "it is quite possible to have perfect observer agreement or accuracy on a given behavioral score with absolutely no reliability or consistency of measurement in the traditional sense" (p. 10). Reliability is present only when both accuracy and consistency are pesent. This view was also supported by Kazdin (1977) who noted that

> although accuracy and agreement are related, they need not go together. For example, an observer may observe accurately (relative to pre-established standard) but show low inter-observer agreement (with another observer whose observations are quite inaccurate), or observe inaccurately (in relation to the standard) but

> show high inter-observer agreement (with another observer who is inaccurate in an identical fashion). (p. 42)

An extension of this issue was developed by Evertson and Green (1986) who stated that

> because presentation of a reliability coefficient does not mean that the information is valid, that the coefficient was determined in an appropriate manner, or that the representation of reality is accurate. One must go beyond the score and ask how reliability was determined and explore the relationship between reliability and validity, since it is possible to measure behaviors reliably that have low validity with regard to the question under study. (p. 185)

In practical situations, there exists a danger that the common practice of using a percentage as an expression of observer agreement as an indicator of observer reliability may mislead many to equate observer agreement, the degree to which observers who viewed certain events agree in their recordings, with reliability, an issue that may imply both consistency and accuracy (van der Mars, 1989). Observer agreement should not be mixed with accuracy, an important element that can be covered by matching pre-determined standard of assessment. Reliability can only be obtained when both accuracy and consistency are present.

Another issue that deserves consideration and has been noted by Mitchell (1969) is that the observer agreement coefficient is usually based on whether two (or more) observers were similar in their tally of total events of each type, but agreement is seldom based on whether the events were coded the same order (i.e., the order as they actually occurred) by the observers. As Rosenshine and Furst (1973) stated that this problem may become acute if investigators are interested in the sequencing of events in their analyses when the coefficient of observer agreement is based solely upon the total number of behavioral occurrences. It is understood that the presentation of sequencing aspects of behavior in analysis of coaching behavior is important and useful in providing feedback information to the coach since sequencing aspects of behavior may, occasionally, reflect important behavioral patterns of a given coach, which might in turn reflect certain characteristics of coaching. For example, if a coach constantly displayed encouragement after corrective feedback of performance to different athletes across coaching sessions, then, the pattern of corrective feedback-encouragement, which reflects a positive way of coaching, would be one of his characteristics of coaching. In light of the questionable value of the agreement coefficient in yielding sequencing events of behavior, standardized recording that completely matches the order of events as they actually occur becomes necessary. It is suggested that the skill of sequential recording of events as they actually occur should be obtained through the process of observer training, which will be discussed in a later section of this chapter.

Issues of Validity

It was noted at the beginning of this section that the key element of validity in observational studies is to obtain an adequate representation of reality in an effort to reduce the possibility of error. Validity can be influenced by many factors including such as behavior definitions, research design, and problems of measurements, all of which influence how accurate and complete the coding records will be. Hawkins and Dotson (1975) suggested at least three potential sources of error in obtaining accurate and objective data. The first is that the definition of the behavior category may be vague or involve high observer inference, or that the behavior may be difficult to detect because of its complexity or subtlety. The second is that the observer may be poorly trained, lack sufficient motivation, or be otherwise incompetent. The third is concerned with observer bias and related issues.

Fassnacht (1982) argued that sources of error of observational research as a means of representing and exploring reality are always found in representational system or process rather than in the segment of reality. If this is the case, then, the observer will be one of the major factors that influence data accuracy. van der Mars (1989) outlined five major obstacles that relate directly to the observer. They are observer drift, complexity of the observation system, expectancies (or bias), reactivity, and cheating, each of which is briefly presented.

Observer drift.

Observer drift refers to an observer's tendency to change coding rules and interpret category definitions differently. This is a gradual process that may have different causes, such as going for a long period without using a system, mixing definitions from one system with those of another, and observing individual instances of behavior that do not neatly fit into any one category and making accommodations for this. Weick (1968) reported that satiation and boredom also cause drift tendencies. To deal with observer drift effectively, Barlow and Hersen (1984) recommended following procedures. First, ensure a good observer training and continue it after completion when needed (skills that were learned in training might be lost without frequent practice). Second, periodically code prescored videotapes and check the agreement with the standard. And finally, periodically rotate the person with whom one compares his/her codings. This is because staying together with one colleague for too long might actually cause both parties to drift together without realizing it, thus remaining in agreement but no longer being accurate. Cooper, Heron, and Heward (1987) also noted that drift decreases when videotapes are used, because observer agreement can then be measured in random order.

Complexity of the observation system.

This is usually influenced by two elements: the number of categories and time intervals. In general, the more categories in a system, the more difficult it will be to make correct coding decisions. The observer may have a hard time keeping up with the fast pace of subtle changes in behavior patterns if the behavior categories are too cumbersome to use. For interval recording (for example, behaviors are coded in every five seconds interval), adding shorter time intervals also tends to increase the pressure on the observer. This issue has already been discussed previously. What is needed to point out is the importance of developing a system with relatively small number of categories that can cover most, if not all, the observations of interest. Furthermore, permanent records (for example, video and/or audio tapes) are recommended because the observer can review the session over and over again. Although this may be more time-consuming, the accuracy of the data is less likely to be influenced by system complexity.

Observer expectancies/biases.

This refers to the phenomenon that observers produce a bias in the data that reflect a change in coded behavior even if the behavior did not really change when observers are told that certain changes in behaviors patterns of teachers/coaches might occur as a result of some type of intervention. O'Leary, Kent, & Kanowitz (1975) stated that expectancies themselves do not seem to influence observers' recording behavior. However, if combined with feedback or information about target subjects' characteristics and/or prejudices of the investigator, they can produce seriously distorted data.

Kazdin (1977) and Cooper, Heron, & Heward (1987) recommended that observer bias can be minimized by (a) videotaping the sessions and coding these permanent records in random order, (b) frequently inserting new observers, and (c) keeping observers naive as to the purposes of the investigation.

Observer reactivity.

When one is aware that someone else is also doing an observation for the purpose of checking his/her reliability, the agreement percentages tend to be higher (Kent, Kanowits, O'Leary, & Cheiken, 1977). This phenomenon is called observer reactivity.

van der Mars (1989) noted that reactivity can be minimized by keeping the assessment of reliability as unobtrusive as possible, notifying observers that all sessions may be screened, and videotaping each session so that no need of contact becomes necessary between the observer and his/her assessor for reliability check purposes.

Observer cheating.

Cheating occurs by way of data fabrication, alteration of data, and incorrect calculation of agreement scores or derivatives from the raw data. Cheating opportunities can be minimized by (a) collecting the coding sheets immediately after an observations session is completed; (b) using pens rather than pencils; (c) letting persons other than the observers do the calculation of agreement percentages; and (d) conducting unannounced, random reliability checks (Barlow and Hersen, 1984).

Observer training.

Observer training in the use of an observational system has become customary practice in an effort to reduce sources of error caused by observer (e.g., Smith, 1978; Bond, 1979; Siedentop, 1983; van der Mars, 1989). In the consideration that many observer training programs are similar to one another, this section provides an overview of the major phases of learning how to use a systematic observation system proposed by van der Mars (1989) as an example of the general process of observer training.

Step 1: Orientation to the system

The observer is introduced to the basic purpose of the observation system, including a description of the types of events or behaviors that can be studied. Barlow and Hersen (1984) noted that this first step should stress the strict adherence to definitions and procedures of the particular system, and not being influenced by personal beliefs, history, and previous personal experiences. Each of these might lead to different interpretations of behavior categories.

Step 2: Learning the categories

The definitions of all categories need to be learned verbatim! Users need to be able to discriminate among the basic categories with 100% accuracy. At the same time, when necessary, the correct category symbols need to be memorized with equal accuracy (for example, the symbol 3 stands for instruction in CBOS). van der Mars notes the importance of analyzing as many videotaped examples as possible to make sure that each category cannot be confused with other closely related categories. According to van der Mars, a written or oral test should be administered to ensure successful completion of this step.

Step 3: Using the coding form correctly

This step involves learning to use the coding form correctly. It takes practice to successfully place symbols in the appropriate areas of the form. Accuracy ought be established before the next phase is started.

Step 4: Initial coding practice

In this step, the observer gets the first opportunity to practice coding by using part of the observation tool while viewing a videotape of a practice session. Use of appropriate videotapes is critical at this stage. Videotapes with behaviors that are relatively easy to code should be used at beginning. That is to say unambiguous behaviors should not be used to avoid frustration on the part of the learner and the instructor at initial stage. As gaining more successful experience, the observer can begin to engage in coding more complex behaviors that reflect variable behavioral patterns. It is a good idea to switch videotapes so that new behavior patterns can be introduced. This will also help to avoid possible prediction of behavior patterns if only one tape is repeatedly used. At this stage, frequent discussion of unclear instances of behavior patterns will help to avoid mistakes. The observer should be encouraged to write down critical information and develop a decision log. This log contains ground rules that the observer refers to during observation sessions. It is important to point out that increase of complexity should be a gradual process so that complexity level always fits competent level of the observer. Furthermore, a perfect match between recording of and actual occurrence of events in terms of sequential aspects of behavior should always be carried out to make the accuracy at a high level.

Step 5: Live observation practice

This step is similar to step 4 with one exception: live observation coding is used. Many of the considerations in step 4 also apply to step 5, especially the principle of gradual increase of complexity. Observation settings should be chosen with care in terms of the complexity of behavior patterns to be coded.

Summary

Above discussions are commonly concerned issues of reliability and validity for observational studies. It is important to note that researchers of observational studies have clear understanding of the concepts of accuracy, observer agreement as related to reliability and validity, and the relationship between them. Researchers should also be aware of and able to apply the methods of reduction of sources of error in data generating and assessing procedures in order to produce research results that can be trusted.

Observational Analysis and Coaching

The following quotation from van der Mars (1989) may be used to highlight the current situation of observational studies:

> Systematic observation has played a major role in the emergence of teaching/coaching behavior research as a bona fide area of empirical study in our profession. Although the descriptive findings may not have lived up to our expectations, the answers to the question of what typically goes in school physical education classes could never have been given with the same confidence in 1970 as they can today. ...In addition, more and more efforts are being made not only to make systematic observation a part of empirical research, but also to use it in the preparation of novice teachers. (p. 5)

A number of behavior analysis studies have been completed by several researchers. Tharp and Gallimore (1976) devised a ten-category system for systematic observation in a teaching/coaching setting. The ten categories were: instruction, hustle, modelling-positive, modelling-negative, praise, scold, non-verbal reward, non-verbal punishment, scold/reinstruction, other and uncodable. They investigated coaching behavior of John Wooden, a leading basketball coach to identify his behavioral patterns at the University of California at L.A. during 1974-75 season and found 50.3% of Wooden's coaching behavior fall into instruction category and 8% into scold/reinstruction category.

Darst et al. (1981) used an instrument similar to the one developed by Tharp and Gallimore to objectively observe the coaching behavior of a head football coach and his assistant coaches at the Arizona State University during 18 practice season. This instrument consisted of 12 categories. They were: instruction, hustle, scold/reinstruct, praise, scold, modelling-positive, modelling-negative, non-verbal reward, non-verbal punishment, other, uncodable, and first name use. These researchers found that the most commonly emitted behaviors by the coaches were instruction, hustle, and scold/reinstruct.

Langsdorf (1979) developed a data collecting instrument called Coaching Behavior Recording Form (CBRF) determining the nature and amount of specific coaching behavior that occurs during a given practice session or within particular segments of a practice session. The CBRF features descriptive terms that identify commonly observed coaching behavior. It contained ten categories of commonly recognized coaching behavior. They were instruction, hustle, praise, non-verbal reward, scold, non-verbal punishment, scold/reinstruction, positive modelling, negative modelling, and first name use. As reported by Langsdorf, this system has been used successfully in basketball and football coaching and seem suitable for most team sports.

Lacy and Darst (1985) used an instrument modified from Tharp and Gallimore's (1976) to observe coaching behaviors of ten experienced winning coaches in various phases of coaching sessions, e.g., warm-up, group/team practice, conditioning in the Phoenix, Arizona during 1982 season. The categories of the system included first name use, praise, scold, instruction, hustle, non-verbal reward, non-verbal punishment, positive modelling, negative modelling, management, and other. They found that the instruction category was used twice as often as any other behavior in every phase of the season. They suggested that more specific categories of the instruction be assigned for further examination.

Quarterman (1980) developed an observational system designed specifically for describing and analyzing behaviors of the physical education teacher and athletic coach. It consisted of 12 teacher/coach categories that were really six pairs of verbal/non-verbal behaviors directed toward either "students attempting skills" or "class behaviors". Specific categories were: positive verbal behaviors, positive non-verbal behavior, corrective verbal behavior, corrective non-verbal behavior, negative verbal behavior, and negative non-verbal behavior. According to Quarterman, the categories were formulated on the principles of operant reinforcement theory and could provide insight relative to positive and negative feedback during athletic practice. It is recognized that the principles of operant theory have been applied successfully in a variety of concerns of coaches such as skill development, managing practics effectively, motivating athletes, and so forth (Martin and Lumsden, 1987; Siedentop and Taggart, 1984).

Rushall (1977) developed two observation schedules that attend to teacher/coach (TOS/COS) and pupil/athletes (POS/AOS). The categories for each pair were identical, but the environment, whether educational or athletic, determined the nature of the analysis. Since the current study focuses on coaching behaviors, only is the TOS/COS discussed and described here. Based on the work of Breywere and Calcherea (1971), Rushall classified coaching/teaching behaviors into seven categories. They were: feedback and rewarding, correcting and prohibiting, questioning, directing explaining and informing, monitoring and attending, managing, and no activity. The schedule focused on the way consequences for participant behaviors are provided, the types of directions or setting events demonstrated, the form of non-interactional behavior occurring, and the occurrence of activities not related to control functions. From these emphases an estimate of the teacher/coach's potential effectiveness could be formed.

The Coaching Behavior Observational System (CBOS) developed by Smith (1978) was primarily designed for describing and analyzing coaching behaviors in practice situations. This ten-category system has received some in-depth discussion on the categories in the previous pages. Besides the feature of behavioral matrix that can effectively reduce the number of categories as well as yield information about sequential aspects of coaching behavior under study, other meaningful tools for organizing data include the generation of "behavior clusters" which are based on combining categories that are conceptually linked to each other. For instance, categories of instruct, positive demonstration, negative demonstration, and corrective feedback may be put together as a cluster of primary coaching behavior; praise, hustle, and scold as a cluster of affective coaching behavior; praise and positive demonstration as a cluster of positive behavior, in the same vein, negative demonstration and scold as a cluster of negative coaching behavior. Then ratios between different clusters can be calculated to generate "coaching style" or "coaching climate" to reflect "the way the coach uses the authority available to him/her (p. 24). It is believed that styles of coaching behavior can be identified along a continuum from direct to indirect. A direct style reflects the way the coach uses authority to instruct, control, discipline, and correct or task oriented, business-like style of coaching. At the other end of the continuum is the indirect style which reflects the coach being warm, rewarding, accepting, and supportive, or person oriented and humanistic style of coaching. Bond (1979) gives a brief summary on the work Smith has done. He states:

> It (CBOS) is the product of a variety of sources, including the many years Smith has had as a coach, observer of coaching and teacher; a thorough review and analysis of research in classroom observation, existing teacher behavior observational instruments, existing instruments for the analysis of coaching behavior, and discussions with a cross-section of active coaches. (p. 52)

Bond (1979) conducted a research to examine the validity of the categories of the CBOS and the associated reliability of observation. As a result of the study, he confirmed the utility of this system for research on the coaching behaviors. Since then, CBOS has been reliably used in a variety of coaching situations for more a decade.

Summary

The application of the observational method to the analysis of coaching behavior is still in the embryonic stage (Bond, 1979; Darst, Mancini, & Zakrajsek, 1983). However, many coaching observational systems have been developed and appeared in the sport psychology literature in resent years. Efforts by a number of scholars have provided considerable knowledge about programmed instruction, behavior modification, training of novice coach, and coach-athlete interactions to enhance the quality of coaching.

Observational Studies in the People's Republic of China

It was mentioned in the introduction chapter that the evaluation of teaching behaviors of physical education for the purpose of assessing effectiveness in the People's Republic of China has been a consistent practice for many years. Typically, teacher behaviors are analyzed and evaluated based on some established theoretical models or standards as a result of the work of influential figures in the theoretic areas of physical education and recreation and/or directly borrowed from Russian text books. Systematic observation of coaching behavior in sports settings in the P.R. China, compared to the observation of teaching behaviors in physical education, is more sporadic and inconsistent. Coaching effectiveness is often evaluated by such output measures as athletes' performance in competitions and/or the rate of progress in learning new skills. Due to these facts, along with the difficulties the researcher encounters in reaching the limited literature pertaining to description based observation of teaching and/or coaching behavior that is difficult to find in North America, it does not seem possible that a rich literature is available for review.

A typical teacher assessment practice may involve several evaluators, each of whom may be responsible for one dimension of several dimensions of the evaluation when a teacher is evaluated. For instance, one may keep recording of the changes of a participant's pulse when different activities are engaged at different points in time within the session by randomly selecting one or two participants and keeping track of their pulse change so that a curve can be drawn to reflect the physiological reactions of the participants. Then, this curve may be used to refer to the physiological changes of the class as a whole. Another evaluator who may be responsible for the work load of the participants may take a count whenever an activity is engaged so that total tallies of activities engaged as well as sub-totals for different segments of the session (e.g., preparatory phase, main phase, and ending phase) can be generated at the end of the session. The results are, then, compared against some established standards for the relevant age group and performance level. Such evaluation practices often have dimensions including attitudes of the teacher (towards the participants and the task at hand, evaluated in terms of appropriateness of the teaching style), how well the teacher carried out the tasks planned for the session (evaluated against a written plan prepared before hand), physiological reactions and changes of the students, and students work load (both as described above). Some other dimensions may include appropriateness of verbal and non-verbal instructions (e.g., degree to which clearness of explanations, appropriateness of commands, correctness of demonstrations in terms of the way or manner that demonstrations are performed, and so forth), effectiveness of using appropriate teaching aids (e.g., proper equipment used for a particular drill, video-, audio aids used to help understanding intuitively a particular learning task), and the degree to which the class was organized. A general report is usually developed to reflect the degree of effectiveness the teacher carried out the class.

It is obvious that above described teacher assessment is evaluation-oriented rather than description-oriented although the general evaluation may involve some description. Description (rather than evaluation) of teaching behavior in a systematic and detailed way remains at sporadic and inconsistent level.

It is recognized that above few paragraphs are virtually a general introduction rather than a literature review on the practice of observational studies in China. It is hoped that, however, that such a general description is helpful to a degree in reflecting the situation of observational studies in the settings of physical activity teaching in a general manner.

CHAPTER III

METHODS AND PROCEDURES

Overview

The primary concerns of this study as set out in Chapter 1 are to develop and validate a coaching behavior observational system appropriate for describing Chinese coaching behaviors and to establish a data base of videotaped recordings of elite Chinese coaching behaviors used for future cross cultural studies. The information that follows in this chapter outlines the methods and procedures employed to fulfil these objectives. Specific concerns are: the development of a set of categories and associated definitions that cover the components of a regular Chinese coaching setting; the generation of ground rules for effective use of the categories; methods of coding observed behaviors (e.g., training procedures); and the analysis of the coded behaviors (behavior clusters, coaching style indices and behavioral matrix). These are the major components thought to compose an observational system effective for describing coaching behaviors.

CBOS and the study elaborating the effective use of COBS conducted by Bond (1979) along with many other systems (approximately 39) available in the relevant literature served as starting point for the development of the current system. The development of categories and ground rules was approached through an analytical work of the examination of the appropriateness of CBOS when it was used to describe Chinese coaching behaviors. The reliability measures and training procedures were based on the knowledge obtained from relevant literature. And the usefulness of the various forms of CBOS for data analysis was assessed based on the log the researcher took during filming, training, coding and analysis, and consequently modified to fit the needs of the current system. The criteria for good system set out by Glassford (1970) that were reviewed in the previous chapter were used as the standards for such concerns.

Development of Categories and Ground Rules of MCBOS

The key issue involved in the development of the current system was to develop a set of categories and ground rules that was appropriate in describing coaching behaviors of the Chinese culture. This issue was considered very important since it was directly concerned with validity of the system. The basic procedures included several steps. They were: (a) translation and validation of the translated CBOS, (b) data collection and analysis of Chinese coaching behavior with Mandarin version of CBOS, (c) analysis of the units of CBOS, and (d) integration of ground rules. Each of these steps is described as follows.

Translation and Validation of the Translated CBOS

The CBOS was carefully studied and translated into Mandarin version by the researcher. The purpose of this process was to make the CBOS accessible to the coaching behaviors of Chinese culture, and to serve as starting point for the development of categories of the MCBOS. To fulfil this goal, a process that involved three basic steps was carried out to make such transition. They were: (a) repeated deliberation of the definitions of categories and ground rules to explore the real meanings of and the relationships between categories, (b) translation of the definitions and ground rules sentence by sentence with carefully chosen Chinese characters to match the proper key words in each definition, and (c) translation of the translated Mandarin version back to English three weeks after the completion of the translation to make sure the original meanings of the CBOS were still there. The translated Mandarin version was then proofread by two other people who had good understanding of both the languages and the knowledge of relevant coaching settings. Discussions about wording and precise meanings of the translation was carried out among the two proof readers and the translator until a consensus was reached.

Upon the establishment of the translated CBOS, actual analysis of segments of coaching behaviors emitted by English speaking coaches with the Mandarin version of CBOS was carried out by two people who had good understanding of both languages, and one of whom was the researcher, the other was a person who had much experience in sports both as an athlete and as a researcher in analyzing coaching/teaching behaviors. This procedure took about a total of ten hours of four separate meetings to complete. The completion of this step was believed that the Mandarin version of CBOS was ready to serve as a good reference for developing a system which would be appropriate for analyzing coaching behaviors exhibited by Chinese coaches.

Data Collection and Analysis of Chinese Coaching Behavior with Mandarin version of CBOS

A part of the data used for the development of MCBOS was collected directly from Mandarin coaching sessions given by the researcher to the students of grade 4-5 and 5-6, Kildare Elementary School, Edmonton through regular physical education classes. The main use of such data was, in conjunction with close scrutiny of the categories and ground rules of many other systems available in the relevant literature, to provide information of Mandarin coaching behavior to be studied and analyzed for the development of tentative categories and ground rules and to serve as first step or a pilot study leading to the development of the categories and ground rules of MCBOS. Two sessions of one hour each were videotaped as preliminary trials to ensure quality results of picture, sound effects, and the focus of video camera for good view of behavior of the coach, interaction between the coach and the students, and the environment in which interactions occurred. Four (4) regular sessions of approximately one hour (60 minutes) each were videotaped to generate the data of coaching behaviors needed for the analysis. This means that a total of approximately 240 minutes of coaching behaviors were videotaped and analyzed. It was believed that this was sufficient to represent the behaviors of the coach and cover common components of coaching behaviors of this sport.

Upon the completion of data collection of this part, the translated categories of CBOS were used to assess the data to see if the categories could include all coaching behaviors collected in the tapes by the researcher. It was assumed that the categories of CBOS might not be accurate enough to cover all coaching behaviors of another culture due to cultural factors. Detailed notes were taken to record those behaviors that did not fit well into any of the categories of the CBOS according to the definitions of the categories. Based on the notes and referenced by categories and definitions of observational systems from other sources available in the relevant literature, new categories were generated to cover those behaviors that did not fit well into the categories of CBOS, and modifications of definitions of some of the existing categories were made so that they became more culturally appropriate to the new system. Careful examination of the definitions of categories and of boundaries between categories of the new system was carried out in such manner as to compare against the criteria for good system (Glassford, 1970). The product of this process was commented by a person, who had excellent experience and knowledge both as an athlete and researcher in the area of teaching and coaching of the Chinese culture. Extensive discussions on the issues such as number of categories, appropriateness of each category and its definition, relationship and exclusiveness between categories, and the usefulness and appropriateness of ground rules were carried out between this person and the researcher. Completion of this process lead to a set of new categories and associated definitions of the new system called "tentative categories of MCBOS". A presentation of detailed analysis of the categories of CBOS that lead to the tentative categories of MCBOS follows this section.

The other part of the data used for this study was collected from Wuhan Institute of Physical Education, the People's Republic of China (WIPE) by video taping regular coaching sessions of elite performance in the sports of gymnastics and basketball. The main use of this data was to validate the tentative categories of MCBOS and to integrate the analysis as a data base for future cross-cultural studies. Four male coaches (two from each sport) were involved and two separate sessions of one hour each given by each coach were video taped. This made a total of eight hours and eight separate coaching sessions (four hours gymnastics and four hours basketball). The video taping was arranged, on the request of the researcher, by one of the colleagues of the researcher, who was a senior researcher in the field of sport psychology and a professor at the WIPE. The researcher was unable to conduct the video taping because of financial constraints (i.e., travelling expense limits). However, the whole process of the data collection was arranged by the researcher. Before the video taping, several correspondences between the researcher and the colleague were made to arrange such things as the inquiry of the willingness of the colleague to help, technical requirements and instructions of video taping, the way of shipping back the videotaped content to the researcher, and so forth. For example, the technical instructions for video taping were: (a) the video taping should occur in a setting that was as close to the regular coaching setting as possible. In other words, the presence of video man and video machine should have as little influence on the coach and the athletes as possible. Suggestions were made to reduce the possible influence by becoming familiar between the coach and athletes and the video man before any videotaping; making a trial session so that the coach and athletes became used to the presence of the video-man and machine; setting the machine in a proper place that was not in any way blocking the coaching setting and also permitted a good view of the coaching setting; (b) the coach should be the main focus of the video camera throughout each session and each behavior of the coach should reflect the context in which it occurred; (c) the tapes should also reflect the time a behavior occurred so as to permit effective encoding later on; and (d) quality effect of sound and picture. The materials sent back and forth were through Canada Post and China Post. It was considered that the most favourable condition for validating the MCBOS was to collect data from actual coaching sessions of the Chinese culture to ensure the external validity of the system.

Analysis of the Units (Categories) of CBOS

The discussion that follows has been based on the analysis of the categories and definitions of 39 published observational systems that have been frequently used in physical activity teaching and/or athletic coaching settings as well as the actual content analysis of physical activity teaching sessions given by the researcher to Mandarin speaking youngsters at the Edmonton Kildare Elementary School. These analyses are carried out against the categories of CBOS.

CBOS was developed by Smith (1978) and "... designed to provide a systematic approach to the analysis of coaching and/or teaching behavior during practice or workout sessions" (p. 1). The theoretical framework of this ten-category system, according to Smith, was based on three main guidelines. They are:

1. The seven generic behavioral classes summarized by Simon and Boyer (1974) based on their review and analysis of 99 observational systems developed and used for the study of counselling and classroom situations. These classes are: (a) affective (emotional aspects of communication); (b) cognitive (intellectual aspects of communication); (c) procedures, routine or control (house-keeping, management, and/or behavior control aspects); (d) physical environment (place, setting, materials to use, etc.); (e) psychomotor (nonverbal communication behavior); (f) activity (rehearsal, repetition, and refinement, of movement patterns); and (g) sociological structure (related to a means of noting who talks to whom, what roles are taken by participant, group size, or demographic information on interactants). Smith (1978) believed that these classes would cover all of the important components of interest in coaching environment (p. 40).

2. Categories represent generic behavioral blocks. Again, according to Smith, this involves an extensive consideration of a wide range of coaching environments to ensure that the most representative coaching behaviors are captured by the categories selected. A scrutiny of above mentioned videotapes of coaching behavior and content analysis of these behaviors against fourteen concepts have been also done. The concepts are: accepts behavior, feelings, ideas; clarifies; controls; criticises; directs; evaluates; informs; lectures; manages; praises; questions; and supports.

3. Categories are functional rather than structural. This issue has been touched in Chapter 2, and no further comments are given here.

Based on above three major guidelines and a few others (e.g., categories must be descriptive as opposed to evaluative; must deal with small bits of action or behavior; and must deal with what can be categorized or measured, p. 39) for the development of his categories, Smith (1978) finalized the following ten-categories: monitor; praise and reward; instruct; demonstration, positive; demonstration, negative; corrective feedback; hustles; scold; management; and other. A complete set of definitions of the categories that is directly quoted from Smith's work (1978) is presented as follows for reference.

Indirect behaviors

1. Monitor. The coach silently observes individuals, small groups, or the entire group as they practice or play. He or she may talk to themselves or show incidental nonverbal behavior while monitoring. Unless these behaviors are seen to have real effects on participants they should be ignored and considered to be external signs of the covert thought processes going on in the coach's mind during monitoring.
2. Praise and reward. The coach verbally or nonverbally praises, offers compliments, encouragement, acceptance or agreement, with participant behavior. Statement may refer to present, past, or future behavior or performance. Nonverbal praise such as nodding, pats on the back, hugging, clapping as in applause, and other recognized gestures of approval are included. Examples of verbal praise, with appropriate tone of voice: "Great!" "Yes, good work!" "Keep going, you'll get it!" "OK! OK!"

Direct behaviors

3. Instruct. Statements about what to do, or how and why to do it. Questions to elicit recall of earlier instruction or to get participant ideas on performance technique, tactics, attitudes, or practice activity. This category includes requests and commands.
Examples: "Hold the hand in this position." "How could you try to counter a move like that by your opponent?" "Be alert all the time." "OK, go ahead." "Stop. Run in and listen to this." "Do you remember what we said about pacing yourself?"
4. Demonstration, positive. The coach, or a participant at the request of the coach, demonstrates how an action is to be carried out. See the ground rules following for an explanation of how to record combined verbal instruction and demonstration.
5. Demonstration, negative. The coach, or a participant at the request of the coach, demonstrates an error in action or an action to be avoided. Again, see the ground rules for recording mixed instruction and negative demonstration.
6. Corrective feedback. Statements or questions by the coach that follow direct observation of performance and which are intended to point out errors or inappropriate aspects of the performance. Such statements are essentially

information, as contrasted with praise or scolds which tend to convey an emotional reaction in the sense of positive valuation or negative valuation of he coach to an observed performance. Corrective feedback is restricted to knowledge or skill areas in which performance can be considered correct or appropriate by definition, or as a matter of fact, or by convention.

Examples: "Your head is too far forward." "Can you get more weight onto your left foot? "That is not how we play a two-on-one situation" (stated in a matter of fact tone of voice). "You are unstable because your feet are too close together, spread them, widen your base."

7. Hustles. Statements or actions by the coach to activate or intensify previously instructed behaviors. Among the actions that can be used as hustles are vigorous, short, rapid clapping (not intended as applause); a quick jabbing motion of a forefinger directed at an individual or group; a quick lunging motion of the shoulders or body; and any other nonverbal behavior that is recognized by participants as calling for more effort or intensity.

Examples of verbal hustles: "Go! Go!" "Drive harder!" "Move it!" "C'mon!" "Hustle!"

8. Scold. Statements intended to scold, criticize or reject the performance, behaviors, feelings, or ideas of participants. This category includes sarcastic statements and expressions of displeasure, both verbal and nonverbal. Among nonverbal scolds are stamping the feet in disgust; a rapid whirl or pivot away from the offending action; a quick movement of the hands to the hips; slapping the forehead as the head is thrown back; a threatened or actual kick, punch, choking, or slashing action; a so-called raspberry or other unpleasant sound, such as a prolonged hiss; and any other action recognized by participants as intending to scold, criticize or reject.

Examples of verbal scolds (with an appropriate tone of voice): "Terrible!" "Stop that right now!" "Get out!" "Lovely, just bloody lovely!" "What the hell do you think you're doing?" "How can you be so stupid! (lazy, selfish, cowardly, etc.)"

9. Management. The coach engages in verbal or nonverbal activity associated with management, housekeeping, routine procedures, announcements, arrangements, other than instruction or arranging or grouping participants for instruction or practice activity. Among management behaviors are taking attendance; making arrangements with

> groundskeepers, janitors or others working or playing in the area; collecting money from participants; giving details related to schedules or travel; arranging car pools; distributing or collecting game uniforms; and so on.
>
> 10. Other. Any coaching behaviors displayed which do not fit into any of the other nine categories. Statements that cannot be understood or occasions where the noise level is so high that the coach cannot be heard over it are recorded here. Chatting or visiting with others, or attending to personal matters unrelated to the coaching or management tasks at hand, fall in this category. (pp. 2-5).

This instrument has been used successfully for analyzing the behavior of coaches in a wide variety of sports of Canadian culture. Because of the theoretical and philosophical stands on which the framework of this instrument is based, the categories and tools for organizing data, and the settings that the instrument is applied, all of which seem to fit the needs of current study better than many other systems that the researcher has reviewed, it has been taken to serve as a starting point for the development of MCBOS that is culturally appropriate to the Chinese coaching sessions.

It is assumed that modifications of categories of CBOS may take place when it is applied to describe coaching behaviors from a different culture due to cultural differences, and some conceptual understandings of the researcher. These are the issues specific to the needs of current study and hopefully become clear as the discussion continues.

Comments on the Exhaustiveness of the Categories

An extension of the Smith system was carried out by Bond (1979), one of Smith's students at the time, who added six (6) sub-categories to the category of "Instruct" in an attempt to fulfil the need for further examination of the "...relevant generic sub-blocks of [instruction]" (Smith, p. 32) to make the system useful for a finer, more detailed analysis for research or to provide improved feedback to a working coach as a basis for tracking changes in behavior. As Smith pointed out, such examination would lead to a "...higher power of resolution in examining the complex behaviors subsumed by this major block of coaching behavior" (p. 32). As a consequence of such examination, the following sub-categories were added to the CBOS categories: command, order, direct; lecture, explain, expand; request; question, implied question; response to player question; and conformation feedback (refer to Appendix 2 for complete definitions of the categories). While the first five additions were restricted to verbal behaviors, the sixth, conformation feedback included both verbal and nonverbal behaviors.

A review of 39 observational systems that have been used frequently in physical activity teaching and/or athletic coaching settings by the researcher has indicated that the categories along with useful tools of CBOS and its sub-categories developed by Bond (1979) cover almost all the concepts that are covered by the categories of the 39 systems with only two exceptions. They are: "first name use"; and "physical contact". A conceptual analysis of these two categories has suggested that the category of first name use does not seem to fit the framework of the current system since it is based on formal structures of behavior rather than functional effects of behavior, an issue that has been touched in previous pages. However, the concept of physical contact could be functionally based if it were used as "physical help" rather than "physical contact", and would express itself the importance of being an independent category if more discussion is involved. In practice, the ultimate meaning of physical contact often involves "physical help or guidance". This occurs frequently in the forms of spotting as used in some individual sports such as gymnastics, and physical guidance in some team sports. "Spot and physical help" is frequently used where the intent is to physically direct an athlete to perform a skill in a "correct" manner. It is understood that this is an important and effective way of teaching or coaching. In coaching sessions, coaches use a variety of ways that appear in different forms of behavior to express themselves. These forms will reflect either conceptual (e.g., instruction), visual (e.g., nonverbal demonstration), tactical (e.g., spot or physical help), or some combinations of these forms. If this understanding were the case, then, the concept of physical help could be seen functionally parallel to the concepts of instruction, and demonstration in instructional process, and would be useful if it were covered by categories of an observational system used in physical activity teaching and/or athletic coaching settings. In addition, the cross-cultural experience of teaching and coaching gymnastics both in China and Canada the researcher has had for more than five years respectively has suggested intuitively that Chinese coaches generally tend to display a higher rate of physical help (spotting in this case) than do Canadian coaches. Chinese coaches seem to have accepted a more traditional way of teaching which emphasizes an active role of teacher, that is, the teacher is always at the centre of the educational process, while students are simply followers. This way of teaching reflects a popularly accepted belief by Chinese educators, which says: "the start point is zero when something new is learned, however, the start point will be below zero when what has already learned has to be corrected". Consequently, as in gymnastics coaching, particularly at lower levels, physical guidance has been used by Chinese coaches as one of the major means to keep the youngster in "correct" track to avoid unnecessary effort. In contrast, Canadian coaches seem to have accepted a different way of teaching known as "discovery learning" that emphasizes an active role of students in the learning process. Such a way of teaching encourages students to be independent, to discover the relationships between things themselves through their own trials. Therefore, in gymnastics coaching, Canadian coaches would understandably display lower rate of physical help than do Chinese coaches. If such differences were the case, it would add more data to support the importance that physical help should be structured as an independent category for an observational system designed to describe Chinese coaching behaviors. It would also help to explain that a possible reason why CBOS does not incorporate this concept might be because the rate of physical help was so low that it was ignored with the consideration of parsimony of the system, which is a cultural factor that has to be considered for the categories of MCBOS.

Comments on the Category of Instruct

For the convenience of the discussions that follow, it should be pointed out that two of the CBOS categories (instruct; and corrective feedback) were restricted to verbal behaviors, three others (monitor; demonstration, positive; and demonstration, negative) were restricted to nonverbal behavior, and the remaining five (praise and reward; hustles; scold; management; and other) both verbal and nonverbal behavior. It should also be pointed out that the sub-categories of instruction (command, order, direct; lecture, explain, expand; request; question, implied question; response to player question; and conformation feedback) must also be restricted to verbal behaviors because the category of instruction has been restricted to verbal behaviors only.

The category of instruct was originally defined in CBOS as "Statements about what to do, or how and why to do it. Questions to elicit recall of earlier instruction or to get participant ideas on performance technique, tactics, attitudes, or practice activity. This category includes requests and commands" (p. 3). "It is important to point out that three of the categories (3, instruct, 6, corrective feedback, and 9, management[1]) are restricted to verbal behaviors" (p. 8). According to these two restrictions, a part of instructional behavior is ruled out, i.e., nonverbal instructional behavior. In practical situations, coaches often use nonverbal commands to start a drill, stop a drill, signal a correct timing to guide a movement, even guide complicated patterns of drills (e.g., pacing drills in ball games). This argument has been supported by Bond (1979) in his research of validating the categories and associated ground rules of the CBOS. In an attempt to deal with those behaviors Bond found difficult to be assigned to categories according to the available CBOS category definitions and ground rules during both observer training and data coding processes of his research, he (1979) made a series of suggestions to improve the efficiency of the ground rules. Item 4 of the suggestions was "hitting, serving or passing the ball into play to begin a drill is a form of instruction" (p. 98). While this suggestion made the nonverbal instructional behaviors to their appropriate category, it set out a challenge to the definitions of the category that has been verbally restricted. As a consequence, it is understood that a removal of the verbal restriction to this category may be an appropriate solution to buffer this challenge. Furthermore, although the title, instruct, refers to instructional behavior, the definition did not say anything to delimit the boundaries. Therefore, if a sentence "This category is restricted to the subject matter at hand" or something similar were added to the definition would make it more explicit, and operationally delimited.

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[1] This should be a printing error because Management was defined as either verbal or nonverbal behavior.

A final concern about the category of instruct is that it is not clear, according to the definition, that organizational behaviors like setting up equipment, keeping order in the class, announcing substitutions, arranging people for instruction should belong to the category of instruct or the category of management. In practice, with respect to the use of the CBOS, behaviors of this type have been put in the category of instruct because they are indirectly related to instruction, they are therefore considered as part of instruction.

It is considered that the major component of coaching behavior is instruction. This is because coaching is a specialized form of teaching whose major role is to pass on knowledge. This helps to explain why many fine distinctions have been made in many of the categories of coaching behavior observational systems (including CBOS). For example, positive demonstration, negative demonstration, and even corrective feedback which often involve explanations of how to perform a skill correctly, or avoid/correct an undesirable move can be considered components of the generic instructional process, but they are separate categories. This is important and acceptable. The point to make here is that it is understood that organizational behaviors that are intended to create conditions for direct instruction can be seen as parallel to the behaviors of demonstration and corrective feedback in the sense that they all belong to the generic instructional process, but are different components which have different functions within the process. Furthermore, a noted phenomenon is that Chinese coaches tend to display a higher rate of organizational behavior than do Canadian coaches, (for example, they line up athletes for instructions as opposed to simply gathering together the athletes which requires less time and fewer behaviors than the former), again, a cultural factor that would influence of the rate of occurrence of the behavior. Therefore, these behaviors should be structured to stand as separate, independent, and distinct essential elements in the generic instructional process. It should be pointed out, however, that because these behaviors are parallel to those categories that are indirectly related to instructional behavior, they should be distinguished from management behaviors such as housekeeping, routine procedures, announcement, arrangement, that are unrelated to the subject matter at hand.

Comments on the Category of Corrective Feedback

CBOS defined the category of corrective feedback as "statements or questions by the coach that follow direct observation of performance and which are intended to point out errors or inappropriate aspects of the performance. Such statements are essentially information, as contrasted with praise or scolds which tend to convey an emotional reaction in the sense of positive valuation or negative valuation of the coach to an observed performance ..." This category was restricted to verbal only in CBOS. However, evidence has been found that coaches point out errors or inappropriate aspects of the performance through nonverbal behaviors. For example, in coaching sessions, if an athlete continuously makes the same mistake(s) in performing a skill that may be difficult to master, the coach may simply imitate the "incorrect" part of the performance to the athlete if previous verbal corrective feedback has been given. In this case, the athlete would understand very well the message that the coach conveys through his physical imitation of the "incorrect" part of performance. Behaviors of this type would be functionally more appropriately assigned to the category of corrective feedback than to any other categories in Smith's system. A contradictory issue would occur if this argument is acceptable. That is, that once such nonverbal behavior occurs it may also seem appropriate to be assigned to the category of negative demonstration. Therefore, more careful consideration is needed or this problem remains unsolved.

The addition of the following distinction might be a helpful approach to solution which could be made as a portion of the ground rules that are intended to set standard conditions for observing behaviors and to provide some formal rules to use in assigning ambiguous behavior to the most appropriate category. In practice situations, if the coach physically imitates the "incorrect" part of the performance of an athlete immediately after direct observation of the performance, this behavior is considered as nonverbal corrective feedback. It is understood that such nonverbal behaviors serve the same function as does verbal corrective feedback, that is, both are intended to correct performance mistakes through different forms of message transmission. Negative demonstration is involved in more direct instructional process than practice as contrasted to nonverbal corrective feedback. In principle, negative demonstration functions as a means of preventing or avoiding performance mistakes while nonverbal corrective feedback is used as a means of correcting performance mistakes.

Summary

In summary, the analysis of categories of CBOS in both deductive (categories of the 39 systems analyzed) and inductive (the actual content analysis of Mandarin sessions by the researcher in a pilot phase of the current research) ways has brought several specific concerns about the development of categories of MCBOS. These concerns include slight modification of definitions of two categories of CBOS (instruct, and corrective feedback) to broaden their coverage in scope; the separation of organizational behavior from "instruct" to make it an independent category in attempting to make finer distinctions of the instructional process, which is the major component of coaching; and the generation of a new category of Physical guidance. These changes along with the remaining categories of CBOS would make the MCBOS a twelve-category observational system. They are: Monitor (1), Praise and reward (2), Instruct (3), Demonstration positive (4), Demonstration negative (5), Corrective feedback (6), Physical guidance (7), Organization (8), Hustle (9), Scold (10), Management (11), and Other (12) (please refer to Appendix 3 for complete definitions of the tentative categories of MCBOS).

Integration of Ground Rules

It would seem redundant to address in details functions and importance of ground rules within an observational system since these issues have been discussed in the previous chapter. However, a brief outline of the usage of ground rules may be useful to refresh the reader's mind. One of the major concerns for the use of ground rules with observational systems is to standardise the coding of observed behaviors so that ambiguous behaviors can be assigned to their most appropriate categories. Ground rules can be set to standardize the manner of recording, for example, rules of assigning a behavior to a category according to its real effect. That is, depending on the observed effect of the behavior it may be placed in one category in one context and in another category in a different context. And rules can also be set to standardize the method of recording, for instance, to record behaviors in every five second intervals. All these are made in an attempt to increase the reliability of an observational system. The ground rules below have been integrated based on those of CBOS, of the Bond's study (1979) as well as notes from the hands-on practice during a pilot phase of the current study.

Rule 1. Numbers corresponding to the twelve categories are recorded by an observer every five seconds. When more than one category of behavior is observed during a five second interval all categories observed are recorded. The numbers indicating categories of observed behavior are recorded in behavior encoding sheets. If any one category of behavior is observed to continue then the number representing the category is repeated every five seconds. Each practice or workout or portion of one that is observed begins and ends by arbitrary convention by recording a 12.

Rule 2. Because the system is descriptive, not evaluative, the observer should not try to guess the intent of the coach but rather to assign behaviors to categories according to how he or she perceives their effect on the participants. For example, a comment may sound like a hustle but the participants clearly react with annoyance and embarrassment which would indicate it had been received as a scold. Then it should be recorded as a scold.

Rule 3. Tone of voice and other aspects of nonverbal behavior must be used in assigning behaviors to categories. The same question, for example, asked in different tones of voice, with appropriate gestures or facial expressions might be properly categorized as instruction (as defined above), as a praise, as a scold, or even as corrective feedback.

Rule 4. During instructional processes, if a demonstration is carried on silently and not described as the action is carried out a four (4) is recorded if positive, a five (5) if negative, at each five second interval as long as the demonstration continues. A demonstration may shift back and forth from positive to negative, which would be indicated by recording 4' and 5's as appropriate. If the demonstration is accompanied simultaneously by verbal instruction, record a 3 and either a 4 or 5 for each five second interval during which this is continued.

Rule 5. In practice situations, if the coach physically imitates the "incorrect" part of the performance of an athlete immediately after direct observation of the performance, this behavior is considered as nonverbal corrective feedback, a 6 then should be recorded. It is understood that such nonverbal behaviors serve the same function as does verbal corrective feedback, that is, both are intended to correct performance mistakes through different forms of message transmission. Negative demonstration is involved in more direct instructional process than practice as contrasted to nonverbal corrective feedback. In principle, negative demonstration functions as a means of preventing or avoiding performance mistakes while nonverbal corrective feedback is used as a means of correcting performance mistakes.

Rule 6. Behaviors that are intended to create conditions for direct instruction such as setting up equipment, keeping order in the class, announcing substitutions, arranging people for instruction should belong to the category of organization. A 8 should be recorded in this case. It should be pointed out, however, that because these behaviors are indirectly related to instructional behavior, they should be distinguished from management behaviors such as housekeeping, routine procedures, announcement, arrangement, that are unrelated to the subject matter at hand.

Rule 7. Laughter by the coach in response to a participant is praise if it shares positive feeling or reassures, but is scold if it rejects or ridicules.

Rule 8. A phrase such as "OK" or "alright" may be a praise or scold depending on the context, or when used in a matter-of-fact way as in, "Well that's done, lets move on to the next thing," it would be an organization.

Rule 9. Saying a participant's name may be merely part of a praise, a scold, a hustle, or even corrective feedback, depending on the tone of voice and other nonverbal behavior the coach displays when he or she says it.

Rule 10. Where the coach is involved in activity as a player or his or her own warm up or stretching activities they should be coded as organization, although clearly he or she may exhibit other behaviors which must be appropriately coded.

Rule 11. In situations where the coach calls out the score it may be coded as organization or a scold depending on the context, emphasis and way it is received by the player(s).

Rule 12. An apology by the coach for inadequate placement of a ball or a mistake should be interpreted as: "It's not your fault, it's mine". This is a form of acceptance to a performance or behavior and should be scored as praise and reward.

Rule 13. In environments where participants are spread out over large areas, or where vision or hearing are difficult (as in a pool), normal intervals of time required in waiting because of such problems should be recorded as monitoring, if the coach is silent. However, during the period the coach waits to get the attention of the group, or as they assemble, he or she may produce behavior clearly in any of the other eleven categories.

Validation of MCBOS

The basic procedures used for validating the categories and ground rules of MCBOS involved analyzing segments of videotaped coaching behavior of actual Chinese coaching sessions with the tentative categories and ground rules, seeking comments and critiques from the experts who offered expert opinion on the categories and ground rules, modification of the categories according to the comments and critiques from the experts, and the recycling of the above procedures until the experts and the researcher reached an agreement about the validity of the modified categories and ground rules. A more complete description of these procedures is presented in chronological order in the section under the title "Procedures".

Subjects (Experts)

Seven (7) experts at the Wuhan Institute of Physical Education (WIPE) in the People's Republic of China offered their expert opinion to validate the categories and ground rules of MCBOS. This group of experts consisted of two panels of knowledge sources. The first panel consisted of four highly experienced coaches (two gymnastic coaches and two basketball coaches) whose full-time coaching experience comprised a total of sixty-four (64) years. All the coaches had university education and were working at a university level institute. The two gymnastic coaches had together thirty-two (32) years full-time coaching experience in the sport of Gymnastics (twenty-four and eight years respectively). One of the two coaches, an Associate Professor in academic teaching, was in his late forties. He had obtained "superior coach" certificate in coaching approved by the National Coaching Committee, of which level had been obtained only by few among the coaching professionals in the nation. He had also produced several world class gymnasts at the time he completed the Questionnaire. The other coach was relatively young in age (fall in the group of 25 - 30 years), but not necessarily inexperienced. He was selected and honoured to coach "the pre-Olympic group" among about forty-five (45) other candidates because of his outstanding performance both in coaching and competition when he had competed as a gymnast. He was in the academic teaching rank "Teaching Assistant". The two basketball coaches had together thirty-two (32) years full-time experience in basketball coaching (twenty and twelve years respectively). They were in teaching ranks of "Associate Professor", and "Lecturer" respectively. All above coaches were coaching the students who were registered in the attached sports school to the WIPE and oriented to compete in future Olympics. The students lived in the school and were trained in a semi-professional way (four to six hours each day and six days a week). Two students in Gymnastics were already in very high performance level (in top 36 all-around in the nation, 1990) and had experience of international competitions while others were still at the performance level of provincial junior team. The basketball students generally competed at the provincial performance level and they were qualified to participate in national basketball competitions.

The other panel consisted of three (3) non-movement teaching staff (two in the area of Psychology of Sport, and one in the area of Theories of Physical Education and Sports Studies). They had a total of ninety-one (91) years experience of teaching and doing research in the areas mentioned above (34, 32, and 25 years respectively). Two of them were in the teaching rank of Associate Professor, and the other was in Professor rank when they completed the Questionnaire. It should be pointed out that this was a very valuable panel for at least two reasons: (a) All three were at least in academic ranks of Associate Professor level. This is very valuable in the sense that it was extremely difficult to be promoted to the Professor rank, the highest rank one could get in the university academic system. To most academic teaching staff, associate professor rank may be the highest position available to them no matter how experienced they were if they did not have extremely outstanding performance in the area(s) of their specialization; (2) two out of the three were nationally recognized figures in the areas of Psychology of Sport and Theories of Physical Education and Sports Studies. For example, the professor in the area of Psychology of Sport was the very first person who was qualified to accept students for the degree of Master of Arts in Psychology of Sport in the nation, and the holder of more than fifteen academic and administrative titles and honours. The associate professor in the Area of theories of Physical Education and Sports Studies was one of the recognized authoritative figures in the specification of theories and practice of analysis of teaching behaviors. He had authored and co-authored several books and textbooks in this area.

Procedures

1. Upon the completion of data collection (i.e., videotaped actual Chinese coaching sessions), the tentative categories and ground rules of MCBOS were used to assess the data to see if the categories included all coaching

behaviors collected. This was done by seeking comments and critiques from the experts through discussion with them individually and group discussion that involved all the experts.

2. Necessary modifications of the categories and ground rules were done according to the feedback given by the experts.

3. The modified categories were used to assess the collected data again to see if they could include all the coaching behaviors collected for the study. When this was done, the modified categories and ground rules were presented to the experts and comments and critiques were sought again.

4. Necessary modifications were made again. The cycling of these procedures went on until all the experts and the researcher reached an agreement that the categories of the system could be used to describe all the coaching behaviors collected adequately and the categories were virtually exclusive to each other, and the ground rules were appropriate for effective behavioral assessment.

Method

Translated form of MCBOS was sent to the colleagues of the researcher in China who had fairly good knowledge and experience in the areas of sport psychology and coaching.

One of the colleagues who had already obtained a master's degree in the area of psychology was responsible for the whole procedures of the validation. He worked to validate the MCBOS in such manner as follows: (a) studying the categories and ground rules of MCBOS carefully to get to know the system and the way it worked as well as possible before he started the procedures described above, (b) distributing copies that contained the categories and ground rules of MCBOS to the experts so that they could get to know the system, (c) seeking comments on the categories and ground rules from the experts through meetings and discussions (individual and group discussion) arranged by this colleague and completed forms collected by him as well.

To record the opinions of the experts in a detailed and efficient way, a questionnaire specifically designed to record the comments of the experts was used (refer to Appendix 4 for a sample of the questionnaire). Upon the completion of above procedures, the comments from the experts were sent back to the researcher for integration.

Coaching Behavior Analysis

In this section, issues related to methods of treating collected data in a meaningful way are addressed. The issues of concern were observer training, coding the data, and the analysis of coded behavior including behavioral clusters, coaching style and social climate index, and sequential aspects of the coaching behavior.

Observer Training

Observer training is one of the important steps of the study. It provides MCBOS users a means to learn standardized coding procedures that play an important role to guard the results of data treatment to be reliable.

The main purpose of the observer training was to gain some experience and to test if the methods and procedures during training are effective.

The MCBOS categories and associated ground rules along with a brief introduction of the purposes of the study and functions of the system was handed over to a second observer, a Chinese graduate student at the University of Alberta who was enthusiastic and volunteered to assist, two days before the training so that he had sufficient time to become familiar with the categories, corresponding number to each category, definitions and ground rules. He was also advised to pay special attention to the precise meaning of definitions of categories, boundaries between categories, and standardized coding procedures specified in ground rules.

In the first phase of the preliminary training, the researcher answered questions about categories and coding procedures with which the second observer was not confident. Precise boundaries between categories and coding rules were stressed and discussed intensively between the two observers. For example, boundaries between organization and instruction, instruction and corrective feedback, and coding rules about how to code behaviors in every five second interval, and so forth (please refer to Appendix 6 for detailed explanations). It was noted that the second observer had a good understanding of the categories and ground rules and remembered the names of the categories and their corresponding numbers at the point of time. This phase lasted about one hour and half to complete.

In the second phase of the training session, after explaining how to use the previously prepared coding sheet properly, the observers worked cooperatively on the verbal coding by number of the categories of behavior of video tape that contained thirty-minute Chinese gymnastics and basketball training sessions. The tape was prepared by the researcher in such a way as to select an adequate representation of most, if not all the twelve categories of coaching behavior of both gymnastics and basketball sessions. Extensive explanations, and discussion were involved concerning appropriate application of the knowledge gained at the first phase to actual coding until the agreement of verbal coding between the two observers became highly intuitively and the second observer became comfortable with the actual coding activities before the independent coding. This phase required about one-hour and half (90 minutes) to complete.

The two observers then independently coded a fourteen-minute segment of gymnastic session using the prepared data sheet.

One week late another ten-minute basketball session was coded independently by the two observers.

The equipment used during the coding phase consisted of a Curtis VR4000 videotape recorder and a twenty inch Magnasonic ELT5205 colour television receiver. The videotape recorder was equipped with the function of on-screen programming. This function was capable of displaying time-count onto screen so that the coding of every five second interval became relatively accurate even with those recorded tapes with no time-display.

Scott's coefficient (1955) was used to calculate the inter-observer agreement. The coefficients obtained for gymnastics sample was 0.89, and for basketball sample was 0.82 (refer to Appendix 5 for a demonstration of the calculation). Both obtained coefficients reached the generally acceptable level (Bond, 1979; Siedentop, 1983). These results suggest that the methods and procedures used in observer training was effective and can be used to train observers effectively.

Coding the Data

All of the data collected from China was coded by the researcher. It was assumed that the accuracy of data coding in terms of precise understanding of category definitions, ground rules, coding procedures of the system should not be a problem because the observer was the researcher, the system developer. Therefore, possible distortions of the original intentions should be minimized to a low point. Furthermore, because of this factor, inter-observer reliability seemed less important than when both observers were not the system developer although the inter-observer agreement was checked and the coefficient was calculated during the observer training.

However, one factor that related directly to the observer could influence the reliability, that is, observer drift, due to fatigue of the observer in this case since a total of approximately eight hours coaching sessions of both gymnastics and basketball was coded in about five days. The actual coding took a total of approximately 15 hours to complete.

To deal with the tendency of observer drift due to physical/mental fatigue, the observer managed to have about fifteen-minute breaks in every one hour to one hour and half of coding and kept each work day of coding to a period not exceeding four hours in total.

A twenty minute basketball coaching segment was used to check the intra-observer reliability. The repeated coding was done a week after the first by the observer, and a 0.96 coefficient was obtained.

Analysis of the Coded Behavior

To group the coded category numbers in a meaningful way for study, Smith (1978) proposed several specific methods (pp. 19-28) that have been proven useful and effective by the use of CBOS for a period of twelve years. There are basically two levels of analysis in CBOS. On the first level, coded category numbers are calculated to present category frequencies and percentages, and then grouped to generate behavior clusters, and coaching style indices. The purposes of the clusters and coaching style indices are to provide information concerning various aspects of coaching behavior and to describe and follow fluctuations and variations between coaches of different levels and sports. On the second level, a behavioral matrix is built to provide information about the sequential aspects of the observed behaviors. The data treatment for MCBOS has been heavily based on the data treatment for CBOS with the consideration that both systems have similar categories and almost identical purposes for research, i.e., to describe coaching behaviors of regular coaching sessions. It should be indicated, however, that there have been some modifications to meet the needs of MCBOS. The modifications have been based on the experience and theoretical understandings of the researcher during the process of development of the current system including the development of categories and ground rules, data collection, and data treatment. The following is a presentation of the two-level data treatment.

Level 1: Behavioral Clusters and Coaching Style Indices

Behavioral clusters

In CBOS, behaviors are grouped to generate clusters under the titles of Primary Coaching Behavior (C), Affective Behavior (A), Indirect Behavior (I), Direct Behavior (D), Positive Behavior (P), and Negative Behavior (N). Table 1 below presents the behavioral clusters used by CBOS and MCBOS and how and why they differentiate from each other in terms of grouping behaviors.

Smith (1978) described the term of C as "the nuts and bolts of coaching and include most, if not all, of the communication regarding cognitive and motor aspects of

TABLE 1

Clusters of CBOS and MCBOS

Primary Coaching Behavior

CBOS	Ins	Dem$^+$	Dem$^-$	CF	
MCBOS	Ins	Dem$^+$	Dem$^-$	CF	PG

Affective Behavior

CBOS	PR	Hus	Sco
MCBOS	PR	Hus	Sco

Indirect Behavior

CBOS	Mon	PR
MCBOS	Mon	PR

Direct Behavior

CBOS	Ins	Dem$^+$	Dem$^-$	CF	Hus	Sco	Man		
MCBOS	Ins	Dem$^+$	Dem$^-$	CF	Hus	Sco	Man	PG	Org

Positive Behavior

CBOS	PR	Dem$^+$	
MCBOS	PR	Dem$^+$	PG

Negative Behavior

CBOS	Dem$^-$	Sco
MCBOS	Dem$^-$	Sco

Management Behavior

CBOS	Man	
MCBOS	Man	Org

Legend: MON = Monitor; PR = Praise and Reward; Ins = Instruct; Dem$^+$ = Demonstration positive; Dem$^-$ =Demonstration negative; CF = Corrective Feedback; PG = Physical Guidance; Org = Organization; Hus = Hustle; Sco = Scold; Man = Management.

performance" (p. 19). In CBOS, the sum of the behaviors observed in categories of instruct, demonstration positive, demonstration negative, and corrective feedback is used to denote this concept since these categories are directly related to cognitive and motor aspects of performance. In MCBOS, however, the category of physical guidance has been added to this cluster with the consideration that it is directly related to coaching and deals with motor aspects of performance. The term A, according to Smith, concerns behaviors which are: "...primarily, but not exclusively, concerned with emotional aspects or affect" (p. 21). The sum of behaviors observed in categories of praise and reward, hustle, and scold is used to represent the concept. Since no category of this kind has been added to MCBOS, this cluster remains identical for both systems. The I cluster defines the sum of behaviors observed in categories monitor and praise and reward in CBOS, and "... connotes an observing, encouraging, supportive, style of teaching or coaching..." (Smith, 1978, p. 21). Again, no category has been added to MCBOS, therefore, this cluster remains the same for both systems. Two categories, physical guidance and organization, have been included in the cluster of D in MCBOS because this term is related to an authoritative coaching style "implicit in giving orders, requiring attention and precision, and correcting errors" (Smith, 1978, p. 21). While the category of organization often appears in the forms of requiring attention and giving orders in practical situations, the category of physical guidance often occurs in the forms of physical assistance, that is often equivalent of verbal order "You must do it like this!". It should be noted that the category of physical guidance has also been included in the P cluster in the sense that this category deals with helping behaviors in a positive way, while the N cluster remains the same for both systems. A new cluster, Management Behaviors (Ma) has been included in MCBOS. This term definesthe sum of behaviors observed in the categories of Organization and Management to reflect organizational and management behavior of the coach. The inclusion of this cluster has been based on the idea that the categories of Organization and Management together could reflect, to a certain extent, the manner of a coach. That is, the extent to which the order of a session is emphasized as opposed to primary skill coaching. It is noted that in CBOS, there is no such cluster because there is only one category (management) dealing with this type of behavior.

Coaching style indices

These provide indices of what Smith referred to as "the coaching climate". By "coaching climate" Smith (1978) meant the extent to which the coaching atmosphere the coach creates by using his/her authority available to him/her for a given coaching session. This concept was borrowed from Flanders' study on classroom teacher behavior (1965) and used to describe a continuum of teaching behavior from direct to indirect. The direct teaching style at one end of the continuum reflects authoritative behavioral mode. The teacher uses authority to "instruct, control, discipline, and correct" that are "task oriented" and "deal with the business of teaching" (Smith, 1978, p. 24). At the other end of the continuum, the indirect style reflects "warm, rewarding, accepting, and supportive" behavioral mode. This mode is "person oriented and humanistic as contrasted with the task orientation of the direct mode" (Smith, 1978, p. 24).

There are four indices or ratios to reflect such coaching climate in CBOS. They are calculated using specific behavior clusters as denominators and numerators of the ratio. The Primary coaching/affective ratio (C/A), provides a ratio of communication regarding cognitive and motor aspects of performance to affective behaviors. The Indirect/direct, ratio (I/D) provides a useful index of shifting physical education teaching style. The Primary coaching/monitor, ratio (C/M) provides information about the proportion of "active" to "inactive" coaching, that is, actual coaching behavior versus behavior intended to obtain information. And the Positive/negative, ratio (P/N) provides an index of the mix between the positive and negative behaviors of coaches, a measure which Smith, Smoll, and Curtis (1978) found to be quite useful.

The usefulness of these four indices as effective devices to provide useful information about coaching climate has been proven by the use of CBOS in variety of sports and performance levels. It is believed that the indices are practical and beneficial to MCBOS if they are borrowed from CBOS. This belief is supported by the consideration of many similarities shared in common by the two systems from theoretical and philosophical stand in a broad sense to specific categories, definitions, and ground rules used by the systems.

It should be pointed out that a further coaching style index that was not included in CBOS has been included in this study. This index is the ratio of the Primary coaching/Management (C/Ma) to reflect behaviors involved in primary skill coaching as opposed to management behaviors. It is calculated by adding the totals of the categories of instruct, demonstration positive, demonstration negative, corrective feedback, and physical guidance and dividing this sum by the totals for the categories of organization and management.

Level 2: Behavioral Matrix

Sequential Aspects of Coaching Behavior

The second level of raw data transformation used by CBOS concerns the construction of a 10 X 10 behavioral matrix, which has also been developed as an outcome of the observational research on classroom teaching (Flanders, 1965), and has been widely accepted by many researchers in behavioral observational area (Darst, Zakrajestk, & Mancini, 1989; Rankin, 1978). The matrix preserves sequential aspects of the observed behavior. Figure 1 is an example of the matrix.

When a given coaching session is recorded, the numbers (tallies) are paired in the following manner.

All tallies appear in two successive pairs. The first tally in each pair indicates the matrix row, the second tally indicates the matrix column. In the above example, pair 10-3 is shown by a tabulation in the cell formed by Row 10 and Column 3. The second pair, 3-3, is shown in the cell formed by Row 3 and Column 3. This procedure permits the total of each column to equal the total of the corresponding row. The tabulations in the matrix can be checked for accuracy by noting that there should be one less pair in the matrix than there are tallies in the original sequence (N-1). In the above example, with 21 tallies in the sequence, the total number of pairs in the matrix is 20.

The behavioral matrix provides at least three useful information about sequential aspects of the observed behavior. The steady state behaviors which continue for more than five seconds can be found in the cells lying along the diagonal in the matrix. The antecedent behaviors that

```
                10                              )
                  ) 1st pair                   1
                 3                  12th pair (
       2nd pair (                              3
                 3                              )
                  ) 3rd pair                   3
                 4                            (
       4th pair (                              3
                 3                              ) 15th pair
                  ) 5th pair                   1
                 1                            (
                (                              1
                 1                              )
                  )                            7
                 2                            (
                (                              2
                 6                              )
                  ) 9th pair                   6
                 4                  20th pair (
                (                              10
                 5
                  )
```

provide information about behaviors preceded any given behavior can be checked by going to column of the category of interest. For example, to determine which behaviors preceded Praise, one goes to column two. Finally, the following behaviors provide information about the behavior occurred after any given behavior. This can be examined by going to the row of the category of interest. Figure 1 provides an example of the matrix. Smith (1978) has stated that sequential information of this type would be:

> ...useful in studying the coaching role, in studying particular coaches, in identifying real relationships among behaviors, and in planning and assessing planned changes in coaching behavior (p. 28).

It is important to note that in order for MCBOS to yield useful information about sequential aspects of the observed behaviors, the behavioral matrix should be constructed as 12 X 12 instead of 10 X 10. This is because there are 12 behavioral categories in MCBOS while there are only 10 categories in CBOS. An example of the 12 X 12 behavioral matrix is presented below.

FIGURE 1

10 X 10 Behavioral Matrix Used in CBOS

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	T
1. monitor	.										
2. praise		.									
3. instruct			.								
4. demo+				.							
5. demo-					.						
6. feedback						.					
7. hustle							.				
8. scold								.			
9. manage									.		
10. other										.	
total											

Sequential information in the matrix

1. Steady state cells along the diagonal indicate the behaviors that continued for more than 5 seconds.

2. Preceding behaviors To see which behaviors preceded behavior in any given category, go to the column of the category and examine each cell in that column.

3. Following behaviors Go to the row of any particular behavior and examine each cell to determine the behaviors that followed.

FIGURE 2

12 X 12 Behavioral Matrix

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1. monitor	.												
2. praise		.											
3. instruct			.										
4. demo+				.									
5. demo-					.								
6. feedback						.							
7. phys.guid							.						
8. organize								.					
9. hustle									.				
10. scold										.			
11. manage											.		
12. other												.	
total													

Sequential information in the matrix

1. Steady state cells along the diagonal indicate the behaviors that continued for more than 5 seconds.

2. Preceding behaviors To see which behaviors preceded behavior in any given category, go to the column of the category and examine each cell in that column.

3. Following behaviors Go to the row of any particular behavior and examine each cell to determine the behaviors that followed.

CHAPTER IV

RESULTS

The purposes of the study were to develop and validate by expert opinion the MCBOS based on the CBOS to describe Chinese coaching behaviors. This system aimed to provide objective information about coaching behaviors emitted by Chinese coaches during practice and instructional situations. Based on extensive discussion and analysis of the categories and ground rules of CBOS, a set of twelve tentative categories and thirteen associated ground rules of MCBOS was generated, and then sent to the experts at Wuhan Institute of Physical Education, the Peoples' Republic of China who offered their expert opinion to validate the tentative categories and ground rules.

Expert Opinion on MCBOS

The following is a summary of the comments from the experts. The questions from the Questionnaire are shown below followed by a summary table with explanation remarks so that comments can be referred to each corresponding question.

1. Can the categories cover all of the coaching behaviors you have analyzed? ______ yes ______ no. If above answer is "No", please specify what behavior(s) does/do not fall into any one of the categories.

2. Do you think that any of the categories should be taken away from the system? ____ yes ____ no. If the answer is "Yes", please indicate what and why.

3. Do you suggest to add any categories into the system? If "Yes", what and why?

4. Do you think that any of the definitions of the categories need modifications to make it/them more appropriate? ____ yes ____ no. If your answer is "Yes", then what, and how?

5. Do you think that the ground rules are appropriate and effective in terms of assigning ambiguous behaviors to the categories to which they should belong? ____ yes ____ no.

6. Do you suggest to add more rules, if any, to help the assessment of encoding ambiguous behaviors? ____ yes ____ no. If yes, then, what?

7. Do you suggest that the researcher take away any of

the ground rules which you think may be useless and/or unpractical? ____ yes ____ no. If yes, then, what?

It is clear from Table 2 that all the experts confirmed the questions 1, 5, 6, and 7 in favour of validating the MCBOS categories and associated ground rules. Among the seven questions, the first four were category related while the other three were ground rule related. All the three ground rule related questions were answered in the affirmative: (a) the ground rules were appropriate in terms of assigning ambiguous behaviors to their appropriate categories effectively; and (b) based on this agreement, neither the addition of any new ground rules to the systems nor the deletion of rules from the existing ground rules were needed.

In terms of the effectiveness and appropriateness of the categories and their associate definitions, all the experts agreed that the categories could cover all the coaching episodes they had analyzed indicating that this 12 category system was capable of yielding a relatively complete picture of Chinese coaching behavior.

MCBOS Behavioral Analysis

The previously collected data of coaching behavior from regular Chinese coaching sessions are descriptively analyzed by using the MCBOS. The following Tables present the results of such analysis. The category counts and percentages, behavior clusters and coaching style indices are presented first, followed by the sequential aspects of the observed behaviors.

The two levels of analysis for each coaching session are presented separately, followed by a presentation of analysis of combined practice sessions for each coach.

To maintain anonymity the four coaches are here referred to as Gymnastics coach A, Gymnastics coach B, Basketball coach A, and Basketball coach B.

TABLE 2

COMMENTS FROM SEVEN MANDARIN EXPERTS ON TENTATIVE CATEGORIES OF MCBOS

QUE.#	ANS.NDED	ANS.AGRED	%	ANS.DAGRD	%	REMARKS
1	YES	7	100	0	0	
2	NO	6	86	1	14	*
3	NO	2	29	5	71	**
4	NO	4	57	3	43	***
5	YES	7	100	0	0	
6	NO	7	100	0	0	
7	NO	7	100	0	0	

Legend: QUE.# = QUESTION NUMBER; ANS.NDED = ANSWER NEEDED TO VALIDATE THE SYSTEM; ANS.AGRED = ANSWER AGREED; ANS.DAGRD = ANSWER DISAGREED.

* Question 2:
One commented that the category "management" should be taken out from the system because the frequency of this category was zero in the coded data.

** Question 3:
Three experts suggested to add "attitude", "manner"; one suggested to add "educate"; one suggested to add "feedback from students".

*** Question 4:
One suggested to change "scold" to "criticise"; one commented that "organization should include all methods and strategies used to organize the class; and one commented that "the implicit meaning of Instruct is very broad, so 'explanation and command' would be more appropriate".

TABLE 3

MCBOS Analysis of Gymnastics Session 1, Coach A

MCBOS Category	Frequency	Percent
1. Monitor	244	35.15
2. Praise	20	2.88
3. Instruct	188	27.09
4. Demo+	25	3.60
5. Demo-	0	0
6. Correct	80	11.53
7. Phys. Guide	59	8.50
8. Organize	38	5.48
9. Hustle	6	0.86
10. Criticize	1	0.14
11. Manage	0	0
12. Other	33	4.76
TOTALS	694	100%

Total Practice time - 39.0 minutes
Observations/minute - 17.72

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (352/694) 100 = 50.72%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (27/694) 100 =3.89%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (264/694) 100 =38.04%

4. Direct Behavior (D)
   Cats. 3 - 11
   (397/694) 100 = 57.20%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (104/694) 100 = 14.98%

6. Negative Behavior (N)
   Cats. 5. 10
   (1/694) 100 = 0.14%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (38/694) 100 = 5.48%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 352/27 = 13.04

2. Primary Coaching/Monitor
   C/M = 352/244 = 1.44

3. Primary Coaching/Manage
   C/Ma = 352/38 = 9.26

4. Indirect/Direct
   I/D = 264/397 = 0.66

5. Positive/Negative
   P/N = 104/1 = 104

TABLE 4

Behavioral Matrix for Gymnastics Session 1, Coach A

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	93	3	86			23	4	11	3			21	244
2 praise	2					9	8					1	20
3 instruct	83	3	54	16		8	15	6				3	188
4 demo+	8		10			6		1					25
5 demo-													0
6 feedback	24	4	11	9		24	6	1				1	80
7 phys.guid	2	9	9			10	25	1	1	1		1	59
8 organize	7		12					14	1			4	38
9 hustle	3	1	1					1					6
10 criticize									1				1
11 manage													0
12 other	22		5				1	3				2	33
total	244	20	188	25	0	80	59	38	6	1	0	33	694

Steady state cells along the diagonal indicate the behavior that continued for more than five seconds. For example, of the 188 instances of instruction, 54 continued for more than five seconds.

Preceding behaviors Go to the COLUMN of a given category and examine each cell. For example, of the 80 instances of corrective feedback, 23 were preceded by monitoring, and 9 by praise.

Following behaviors Go to the ROW of a given category and examine each cell. For the 6 instances of hustles, 1 were followed by instruction, and 3 by monitoring.

TABLE 5

MCBOS Analysis of Gymnastics Session 2, Coach A

MCBOS Category	Frequency	Percent
1. Monitor	398	43.59
2. Praise	30	3.29
3. Instruct	159	17.42
4. Demo+	38	4.16
5. Demo-	1	0.11
6. Correct	76	8.32
7. Phys. guide	80	8.76
8. Organize	27	2.96
9. Hustle	9	0.99
10. Criticize	2	0.22
11. Manage	0	0
12. Other	93	10.19
TOTALS	913	100%

Total Practice time - 55.0 minutes
Observations/minute - 16.60

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (354/913) 100 = 38.77%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (41/913) 100 = 4.49%

3. Indirect Behavior (I)
   Cats. 1. 2
   (428/913) 100 = 46.88%

4. Direct Behavior (D)
   Cats. 3 - 11
   (392/913) 100 = 42.94%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (148/913) 100 = 16.21%

6. Negative Behavior (N)
   Cats. 5. 10
   (3/913) 100 = 0.33%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (27/913) 100 = 2.96%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 354/41 = 8.63

2. Primary Coaching/Monitor
   C/M = 354/398 = 0.89

3. Primary Coaching/Manage
   C/Ma = 354/27 = 13.11

4. Indirect/Direct
   I/D = 428/392 = 1.09

5. Positive/Negative
   P/N = 148/3 = 49.33

TABLE 6

Behavioral Matrix for Gymnastics Session 2, Coach A

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	221	14	52			37	30	16	5	2		21	398
2 praise	16	2	3			8						1	30
3 instruct	55	4	60	33			2	4				1	159
4 demo+	1		30		1	4		1				1	38
5 demo-			1										1
6 feedback	36	10		5		25							76
7 phys.guid	24		3			2	20		4			27	80
8 organize	14		7					4				2	27
9 hustle	7						2						9
10 criticize	2												2
11 manage													0
12 other	22		3				26	2				40	93
total	398	30	159	38	1	76	80	27	9	2	0	93	913

(See note at Table 4 to interpret)

TABLE 7

MCBOS Analysis of Combined Gymnastics Sessions 1 and 2, Coach A

MCBOS Category	Frequency	Percent
1. Monitor	642	39.95
2. Praise	50	3.11
3. Instruct	347	21.59
4. Demo+	63	3.92
5. Demo-	1	0.06
6. Correct	156	9.71
7. Phys. guide	139	8.65
8. Organize	65	4.04
9. Hustle	15	0.93
10. Criticize	3	0.17
11. Manage	0	0
12. Other	126	7.84
TOTALS	1607	100%

Total Practice time - 94.0 minutes
Observations/minute - 17.09

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (706/1607) 100 = 43.93%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (68/1607) 100 = 4.23%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (692/1607) 100 = 43.06%

4. Direct Behavior (D)
   Cats. 3 - 11
   (789/1607) 100 = 49.10%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (252/1607) 100 = 15.68%

6. Negative Behavior (N)
   Cats. 5. 10
   (4/1607) 100 = 0.25%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (65/1607) 100 = 4.04%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 706/68 = 10.38

2. Primary Coaching/Monitor
   C/M = 706/642 = 1.10

3. Primary Coaching/Manage
   C/Ma = 706/65 = 10.86

4. Indirect/Direct
   I/D = 692/789 = 0.88

5. Positive/Negative
   P/N = 252/4 = 63.00

TABLE 8

Behavioral Matrix for Combined Gymnastics
Sessions 1 and 2, Coach A

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	314	17	138			60	34	27	8	2		42	642
2 praise	18	2	3			17	8					2	50
3 instruct	138	7	114	49		8	17	10				4	347
4 demo+	9		40		1	10		2				1	63
5 demo-			1										1
6 feedback	60	14	11	14		49	6	1				1	156
7 phys.guid	26	9	12			12	45	1	5	1		28	139
8 organize	21		19					18	1			6	65
9 hustle	10	1	1				2	1					15
10 criticize	2								1				3
11 manage													0
12 other	44		8				27	5				42	126
total	642	50	347	63	1	156	139	65	15	3	0	126	1607

(See note at Table 4 to interpret)

Data from Tables 7 and 8 indicate that coach A of gymnastics displayed an average of 17.09 codable behaviors per minute over a total of 94 minutes of two coaching sessions. This rate is slightly higher than the average rate of 14 to 16 behaviors per minute Smith reported in his studies (1978).

The clusters of Direct Coaching Behavior (D) (49.10%) and Indirect Coaching Behavior (I) (43.06%) show that the coach almost equally distributed his coaching behavior to these two clusters. This would suggest that he adopted a coaching style that fell somewhere close to the middle point of the authoritative-supportive continuum of coaching style. It is interesting to note that the cluster of Primary Coaching Behavior (C) are counted for 43.93% of the behaviors while Affective Coaching Behavior (A) counted only 4.23% of the total behavior displayed. This would suggest that the sessions observed were dominated by an atmosphere oriented to cognitive and motor aspects of performance. The coach displayed relatively few behaviors that conveyed clear emotional messages. The clusters of Positive behavior (P) and Negative Behavior (N) show 15.68% and 0.25% of the total behavior respectively suggesting that the learning environment was a positive one.

The ratios of Coaching Style Indices show some interesting relationships and further support the analysis above. For example, there occurred one Affective Behavior for about every ten Primary Coaching Behaviors; only one Negative Behavior for every sixty Positive Behaviors; one Managerial Behavior for about every eleven Primary Coaching Behavior. However, the ratio between Primary Coaching and Monitor was about one to one.

With regard to the preceding and following behaviors, it is interesting to note that of the three most frequent behaviors displayed by the coach (Monitor, Instruct, and Corrective Feedback in the present case), 138 Instruction behaviors preceded, and 138 Instruction behaviors followed Monitor behavior; 138 Monitor behaviors preceded, and 138 Monitor behaviors followed Instruction behavior; and 60 Monitor behaviors preceded, and 60 Monitor behaviors followed instances of Corrective Feedback.

As discussed previously, an effective way to keep the number of categories in an observational system at a manageable level is to use a behavioral matrix to display behavior frequencies. The matrix allows one to identify patterns of coaching behavior by identifying how frequently any behavior precedes, or is followed by any other. Examples of behaviors that often occur together are Scold/Instruct, Hustle/Praise, and Monitor/Corrective Feedback. These common combinations of behaviors are conveniently displayed by the behavioral matrix.

The matrix (Table 8) clearly shows several characteristic combinations of the behavior of coach A. By far the most likely behavior to follow a Monitor, was more of the same. Of the 642 Monitor behaviors, almost half (314) were longer than 5 seconds, indicating that the coach was quite reflective and that he carefully observed and analyzed the activity going on around him. The second most frequent behavior to follow Monitor was Instruct (138) which implies that instructions were very frequently based on his observations. The third most frequent behavior to follow Monitor was Corrective Feedback (60). These three common combinations of coaching behaviors - Monitor/Monitor, Monitor/Instruct, Monitor/Corrective Feedback - are consistent with good teaching and coaching practice (Travers, 1973; Flanders, 1970; Tharp and Gallimore, 1976; Rankin, 1978).

Examining preceding behaviors provides further insight into Coach A's approach. For example, Column 6, Corrective Feedback indicates that the most frequent preceding behavior was Monitor (60), then Corrective Feedback (49), Praise (17) and Demonstration Positive (10). Of the 156 instances of Corrective Feedback, 49 fall in the diagonal or "steady-state" cell which indicates they are longer than 5 seconds. Given the very low frequency of Negative Behaviors, 4 out of 1067 (Table 7) the conclusion is that the Corrective Feedback was supportive, analytical, and specific. A review of the recorded dialogue of these behaviors supports that contentions.

Finally, the combination of coaching behaviors displayed in column 6 of Table 8: Monitor/Corrective Feedback; Corrective Feedback/Corrective Feedback; Praise/Corrective Feedback; and Demonstration Positive/Corrective Feedback are further examples of a positive approach to coaching (Darst, et al, 1989; Hawkius, et al, 1985; Smith, 1980).

TABLE 9

MCBOS Analysis of Gymnastics Session I, Coach B

MCBOS Category	Frequency	Percent
1. Monitor	270	39.18
2. Praise	11	1.60
3. Instruct	96	13.93
4. Demo+	9	1.31
5. Demo-	3	0.43
6. Correct	113	16.40
7. Phys. guide	84	12.19
8. Organize	94	13.64
9. Hustle	1	0.15
10. Criticize	0	0
11. Manage	0	0
12. Other	8	1.16
TOTALS	689	100%

Total Practice time - 49.0 minutes
Observations/minute - 14.06

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (305/689) 100 = 44.27%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (12/689) 100 = 1.74%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (281/689) 100 = 40.78%

4. Direct Behavior (D)
   Cats. 3 - 11
   (400/689) 100 = 58.06%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (104/689) 100 = 15.09%

6. Negative Behavior (N)
   Cats. 5. 10
   (3/689) 100 = 0.43%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (94/689) 100 = 13.64%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 305/12 = 225.42

2. Primary Coaching/Monitor
   C/M = 305/270 = 1.13

3. Primary Coaching/Manage
   C/Ma = 305/94 = 3.24

4. Indirect/Direct
   I/D = 281/400 = 0.70

5. Positive/Negative
   P/N = 104/3 = 34.67

TABLE 10

Behavioral Matrix for Gymnastics Session 1, Coach B

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	161	6	27		1	55	8	8	1			31	270
2 praise	4	2	3			2							11
3 instruct	39	1	41	5	1	2	3	3				1	96
4 demo+	1		8										9
5 demo-			1	1		1							3
6 feedback	43	1	7	1		47	12					2	113
7 phys.guid	11	1	5	1	1	5	58	2					84
8 organize	8		2	1			3	80					94
9 hustle	1												1
10 criticize													0
11 manage													0
12 other	2		2			1		1				2	8
total	270	11	96	9	3	113	84	94	1	0	0	8	689

(See note at Table 4 to interpret)

TABLE 11

MCBOS Analysis of Gymnastics Session 2, Coach B

MCBOS Category	Frequency	Percent
1. Monitor	288	37.16
2. Praise	14	1.81
3. Instruct	168	21.68
4. Demo+	48	6.19
5. Demo-	0	0
6. Correct	97	12.52
7. phys. guide	104	13.42
8. Organize	32	4.13
9. Hustle	10	1.29
10. Criticize	1	0.13
11. Manage	0	0
12. Other	13	1.68
TOTALS	775	100%

Total Practice time - 48.0 minutes
Observations/minute - 16.15

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (417/775) 100 = 53.81%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (25/775) 100 = 3.23%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (302/775) 100 = 38.97%

4. Direct Behavior (D)
   Cats. 3 - 11
   (460/775) 100 = 59.35%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (166/775) 100 = 21.42%

6. Negative Behavior (N)
   Cats. 5. 10
   (1/775) 100 = 0.13%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (32/775) 100 = 4.13%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 417/25 = 16.68

2. Primary Coaching/Monitor
   C/M = 417/288 = 1.45

3. Primary Coaching/Manage
   C/Ma = 417/32 = 13.03

4. Indirect/Direct
   I/D = 302/460 = 0.66

5. Positive/Negative
   P/N = 166/1 =166.00

TABLE 12

Behavioral Matrix for Gymnastics Session 2, Coach B

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	152	6	62	1		24	20	11	6			6	288
2 praise	10		1			3							14
3 instruct	60	4	46	41		6	5	4	1			1	168
4 demo+	1		41	3		1	1	1					48
5 demo-													0
6 feedback	30	1	5	2		51	4	1	1	1		1	97
7 phys.guid	12	2	6			7	72	3	2				104
8 organize	11	1	4	1		1		11				3	32
9 hustle	6		1			1	2						10
10 criticize						1							1
11 manage													0
12 other	6		2			2		1				2	13
total	288	14	168	48	0	97	104	32	10	1	0	13	775

(See note at Table 4 to interpret)

TABLE 13

MCBOS Analysis of Combined Gymnastics Sessions 1 and 2, Coach B

MCBOS Category	Frequency	Percent
1. Monitor	558	38.11
2. Praise	25	1.71
3. Instruct	264	18.03
4. Demo+	57	3.89
5. Demo-	3	0.20
6. Correct	210	14.34
7. Phys. guide	188	12.84
8. Organize	126	8.61
9. Hustle	11	0.75
10. Criticize	1	0.07
11. Manage	0	0
12. Other	21	1.43
TOTALS	1464	100%

Total Practice time - 97.0 minutes
Observations/minute - 15.09

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (722/1464) 100 = 49.32%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (47/1464) 100 = 3.21%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (583/1464) 100 = 39.82%

4. Direct Behavior (D)
   Cats. 3 - 11
   (870/1464) 100 = 59.43%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (270/1464) 100 = 18.44%

6. Negative Behavior (N)
   Cats. 5. 10
   (4/1464) 100 = 0.27%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (126/1464) 100 = 8.61%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 722/47 = 15.36

2. Primary Coaching/Monitor
   C/M = 722/558 = 1.29

3. Primary Coaching/Manage
   C/Ma = 722/126 = 5.73

4. Indirect/Direct
   I/D = 583/870 = 0.67

5. Positive/Negative
   P/N = 270/4 = 67.50

TABLE 14

Behavioral Matrix for Combined Gymnastics
Sessions 1 and 2, Coach B

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	313	12	89	1	1	79	28	19	7			9	558
2 praise	14	2	4			5							25
3 instruct	99	5	87	46	1	8	8	7	1			2	264
4 demo+	8		49	3		1	1	1					57
5 demo-			1	1		1							3
6 feedback	73	2	12	3		98	16	1	1	1		3	210
7 phys.guid	23	3	11	1	1	12	130	5	2				188
8 organize	19	1	6	2		1	3	91				3	126
9 hustle	7		1			1	2						11
10 criticize						1							1
11 manage													0
12 other	8		4			3		2				4	21
total	558	25	264	57	3	210	188	126	11	1	0	21	1464

(See note at Table 4 to interpret)

Data from Tables 13 and 14 show that gymnastic coach B displayed an average of 15.09 codable behaviors per minute over a total of 97 minutes of two coaching sessions, compared to Coach A whose average was 17.09.

The clusters of D (59.10%) and I (39.82%) show that the coach adopted a moderately authoritative style in his coaching. This analysis can be further supported by the clusters of C (49.32%) and of A (3.21%) of the total behavior he displayed. This would suggest that the sessions observed were dominated by an atmosphere oriented to cognitive and motor aspects of performance.

The clusters of P and N show 18.44% and 0.27% of the total behavior respectively suggesting that the learning environment was very positive.

The ratios of Coaching Style Indices display specifically the relationships between different clusters. For example, the C/A Ratio of 15.36 again indicates an emphasis on cognitive and motor aspects of performance. The C/M Ratio of 1.29 would suggest that the primary coaching behaviors were based on close monitoring behaviors. The P/N Ratio of 67.50 is a further indication that the learning environment was a very positive one.

With regard to the preceding and following behaviors, it is interesting to note that the three most frequently displayed behaviors (Monitor, Instruct, and Corrective Feedback in the present case), are very similar to the percentages of those displayed by coach A of the sport.

The matrix (Table 14) shows that coach B displayed the same most three frequent combinations of behavior that were displayed by coach A (Monitor/Monitor, Monitor/Instruct, Monitor/Corrective Feedback). Of the 558 Monitor behaviors, more than half (313) were longer than 5 seconds, ninety-nine (99) were followed by Instruct behaviors, and seventy-three (73) were followed by Corrective Feedback behaviors. These combinations of behavior indicate that the instructions and feedbacks were frequently based on careful observations. The coach was quite reflective and carefully observed and analyzed the activity going on around him. Again, these common combinations of coaching behaviors are consistent with good teaching and coaching practice (Travers, 1973; Flanders, 1970; Tharp and Gallimore, 1976; Rankin, 1978).

Examining preceding behaviors provides further insight into Coach B's approach. For example, Column 6, Corrective Feedback indicates that of the 210 instances of Corrective Feedback, the most frequent preceding behavior was Corrective Feedback (98), then Monitor (79), Physical Guidance (12) and Instruct (8) indicating that the coach focused on the correction of performance errors. Given the very low frequency of Negative Behaviors, 4 out of 1464 (Table 13), the conclusion is that the Corrective Feedback was supportive, analytical, and specific. Instruct, Corrective Feedback along with Monitor and Physical Guidance together made the major components of the coaching session.

Finally, the combination of coaching behaviors displayed in column 6 of Table 14: Corrective Feedback/Corrective Feedback; Monitor/Corrective Feedback; Physical Guidance/Corrective Feedback; and Instruct/Corrective Feedback are further examples of a positive approach to coaching (Darst, et al, 1989; Hawkius, et al, 1985; Smith, 1980).

TABLE 15

MCBOS Analysis of Basketball Session 1, Coach A

MCBOS Category	Frequency	Percent
1. Monitor	273	33.13
2. Praise	38	4.61
3. Instruct	269	32.65
4. Demo+	56	6.70
5. Demo-	5	0.61
6. Correct	62	7.52
7. phys. guide	0	0
8. Organize	109	13.23
9. Hustle	4	0.49
10. Criticize	1	0.12
11. Manage	0	0
12. Other	7	0.85
TOTALS	824	100%

Total Practice time - 47.0 minutes
Observations/minute - 17.53

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (392/824) 100 = 47.57%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (43/824) 100 = 5.22%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (311/824) 100 = 37.74%

4. Direct Behavior (D)
   Cats. 3 - 11
   (506/824) 100 = 61.41%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (94/824) 100 = 11.41%

6. Negative Behavior (N)
   Cats. 5. 10
   (6/824) 100 = 0.73%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (109/824) 100 = 13.23%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 392/43 = 9.12

2. Primary Coaching/Monitor
   C/M = 392/273 = 1.44

3. Primary Coaching/Manage
   C/Ma = 392/109 = 3.60

4. Indirect/Direct
   I/D = 311/506 = 0.61

5. Positive/Negative
   P/N = 94/6 = 15.67

TABLE 16

Behavioral Matrix for Basketball Session 1, Coach A

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	115	21	61			21		50	3			2	273
2 praise	22		14			1		1					38
3 instruct	84	17	106	32		16		12	1			1	267
4 demo+	3		31	9	1	11		1					56
5 demo-				1		3		1					5
6 feedback	21		16	12	4	6		2				1	62
7 phys.guid													0
8 organize	24		39	1		3		39		1		2	109
9 hustle	3		1										4
10 criticize			1										1
11 manage													0
12 other	1			1		1		3				1	7
total	273	38	267	56	5	62	0	109	4	1	0	7	824

(See note at Table 4 to interpret)

TABLE 17

MCBOS Analysis of Basketball Session 2, Coach A

MCBOS Category	Frequency	Percent
1. Monitor	380	49.41
2. Praise	17	2.21
3. Instruct	208	27.05
4. Demo+	7	0.91
5. Demo-	0	0
6. Correct	17	2.21
7. Phys. guide	0	0
8. Organize	128	16.64
9. Hustle	8	1.04
10. Criticize	0	0
11. Manage	0	0
12. Other	4	0.52
TOTALS	769	100%

Total Practice time - 46.0 minutes
Observations/minute - 16.72

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (232/769) 100 = 30.17%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (26/769) 100 = 3.38%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (397/769) 100 = 51.63%

4. Direct Behavior (D)
   Cats. 3 - 11
   (368/769) 100 = 47.85%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (24/769) 100 = 3.12%

6. Negative Behavior (N)
   Cats. 5. 10
   (0/769) 100 = 0.00%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (128/769) 100 = 16.64%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 232/26 = 8.92

2. Primary Coaching/Monitor
   C/M = 232/380 = 0.61

3. Primary Coaching/Manage
   C/Ma = 232/128 = 1.81

4. Indirect/Direct
   I/D = 397/369 = 1.08

5. Positive/Negative
   P/N = 24/1 = 24

TABLE 18

Behavioral Matrix for Basketball Session 2, Coach A

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	202	12	101			8		50	7				380
2 praise	12		3					2					17
3 instruct	121	4	57	6		2		16	1			1	207
4 demo+			3			1		3					7
5 demo-													0
6 feedback	6		4	1		4		2					17
7 phys.guid													0
8 organize	33	1	38			2		54					128
9 hustle	6		2										8
10 criticize													0
11 manage													0
12 other								1				3	4
total	380	17	207	7	0	17	0	128	8	0	0	4	769

(See note at Table 4 to interpret)

TABLE 19

MCBOS Analysis of Combined Basketball sessions 1 and 2, Coach A

MCBOS Category	Frequency	Percent
1. Monitor	653	40.99
2. Praise	55	3.45
3. Instruct	477	29.94
4. Demo+	63	3.95
5. Demo-	5	0.31
6. Correct	79	4.96
7. Spot	0	0
8. Organize	237	14.88
9. Hustle	12	0.75
10. Criticize	1	0.06
11. Manage	0	0
12. Other	11	0.69
TOTALS	1593	100%

Total Practice time - 93.0 minutes
Observations/minute - 17.13

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
Cats. 3 - 7
(624/1593) 100 = 39.17%

2. Affective Behavior (A)
Cats. 2. 9. 10
(68/1593) 100 = 4.27%

3. Indirect Behavior (I)
Cats. 1 - 2
(708/1593) 100 = 44.44%

4. Direct Behavior (D)
Cats. 3 - 11
(874/1593) 100 = 54.87%

5. Positive Behavior (P)
Cats. 2. 4. 7
(118/1593) 100 = 7.41%

6. Negative Behavior (N)
Cats. 5. 10
(6/1593) 100 = 0.38%

7. Managerial Behavior (Ma)
Cats. 8. 11
(237/1593) 100 = 14.88%

Coaching Style Indices

1. Primary coaching/affective
C/A = 624/68 = 9.18

2. Primary Coaching/Monitor
C/M = 624/653 = 0.96

3. Primary Coaching/Manage
C/Ma = 624/237 = 2.63

4. Indirect/Direct
I/D = 708/874 = 0.81

5. Positive/Negative
P/N = 118/6 = 19.67

TABLE 20

Behavioral Matrix for Combined Basketball Sessions 1 and 2, Coach A

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	317	33	162			29		100	10			2	653
2 praise	34		17			1		3					55
3 instruct	205	21	163	38		18		28	2			2	477
4 demo+	3		34	9	1	12		4					63
5 demo-				1		3		1					5
6 feedback	27		20	13	4	10		4				1	79
7 phys.guid													0
8 organize	57	1	77	1		5		93		1		2	237
9 hustle	9		3										12
10 criticize		1											1
11 manage													0
12 other	1			1		1		4				4	11
total	653	55	477	63	5	79	0	237	12	1	0	11	1593

(See note at Table 4 to interpret)

Data from Tables 19 and 20 show that the basketball coach A displayed an average of 17.13 codable behaviors per minute over a total of 93 minutes of two coaching sessions.

The clusters of D (54.87%) and I (44.44%) show that the coach adopted a coaching style that was oriented slightly more towards the authoritative side than to the supportive side of coaching. Furthermore, if the clusters of C (39.17%) and A (4.27%) are taken into account, it becomes very clear that the sessions observed were focused on cognitive and motor aspects of performance. The clusters P and N show 7.41% and 0.38% of the total behavior respectively indicating that the learning environment was very positive.

With regard to the ratios of Coaching Style Indices, the C/A ratio of 27.09 indicated coaching dominated by attention to cognitive and motor aspects of the performance. The C/M Ratio, 0.81 would suggest that the primary coaching behaviors were largely based on monitoring behaviors. The P/N Ratio, 24.50, indicates that the learning environment was a very positive one although it is considerably lower than those of the gymnastic coaches. The P/N Ratio 24.50 is much lower than that of the gymnastic coaches whose ratios were 63.00 and 67.50 respectively. The large differences here reflect different coaching styles and may also be related to the different environments encountered in gymnastics and basketball.

The preceding and following behaviors show that the three most frequently displayed behaviors were Monitor, Instruct, and Organization. In all 205 instruct behaviors preceded, and 162 instruct behaviors followed Monitor behaviors; 162 Monitor behaviors preceded, and 205 Monitor behaviors followed Instruct behavior; and 100 Monitor behaviors preceded, and 77 Instruct behaviors followed Organizational behavior. These recurring patterns: Instruct/Monitor; Monitor/Instruct; Monitor/Organization; and Organization/Instruct, are again consistent with what current instructional theory recommends (Flanders, 1970; Smith, 1980).

TABLE 21

MCBOS Analysis of Basketball Session 1, Coach B

MCBOS Category	Frequency	Percent
1. Monitor	370	48.18
2. Praise	5	0.65
3. Instruct	235	30.60
4. Demo+	25	3.26
5. Demo-	1	0.13
6. Correct	18	2.34
7. Phys. guide	19	2.47
8. Organize	82	10.68
9. Hustle	5	0.65
10. Criticize	1	0.13
11. Manage	0	0
12. Other	7	0.91
TOTALS	768	100%

Total Practice time - 51.0 minutes
Observations/minute - 15.06

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (298/768) 100 = 38.80%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (11/768) 100 = 1.43%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (375/768) 100 = 48.83%

4. Direct Behavior (D)
   Cats. 3 - 11
   (386/768) 100 = 50.26%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (49/768) 100 = 6.38%

6. Negative Behavior (N)
   Cats. 5. 10
   (2/768) 100 = 0.26%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (82/768) 100 = 10.68%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 298/11 = 27.09

2. Primary Coaching/Monitor
   C/M = 298/370 = 0.81

3. Primary Coaching/Manage
   C/Ma = 298/82 = 3.63

4. Indirect/Direct
   I/D = 375/386 = 0.97

5. Positive/Negative
   P/N = 49/2 = 24.5

TABLE 22

Behavioral Matrix for Basketball Session 1, Coach B

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	239	4	46			15	17	41	4	1		3	369
2 praise	4		1										5
3 instruct	62	1	140	20	1		1	10					235
4 demo+	3		17	3		1		1					25
5 demo-			1										1
6 feedback	14		1	2		1							18
7 phys.guid	18								1				19
8 organize	25		26			1		29				1	82
9 hustle	3		1				1						5
10 criticize			1										1
11 manage													0
12 other	2		1					1				3	7
total	369	5	235	25	1	18	19	82	5	1	0	7	768

(See note at Table 4 to interpret)

TABLE 23

MCBOS Analysis of Basketball Session 2, Coach B

MCBOS Category	Frequency	Percent
1. Monitor	411	49.52
2. Praise	13	1.57
3. Instruct	273	32.89
4. Demo+	16	1.93
5. Demo-	0	0
6. Correct	34	4.10
7. Phys. guide	2	0.24
8. Organize	66	7.95
9. Hustle	10	1.20
10. Criticize	0	0
11. Manage	0	0
12. Other	5	0.60
TOTALS	830	100%

Total Practice time - 49.0 minutes
Observations/minute - 16.94

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (325/830) 100 = 39.16%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (23/830) 100 = 2.77%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (424/830) 100 = 51.08%

4. Direct Behavior (D)
   Cats. 3 - 11
   (401/830) 100 = 48.31%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (31/830) 100 = 3.73%

6. Negative Behavior (N)
   Cats. 5. 10
   (0/830) 100 = 0.00%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (66/830) 100 = 7.95%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 325/23 = 14.13

2. Primary Coaching/Monitor
   C/M = 325/411 = 0.79

3. Primary Coaching/Manage
   C/Ma = 325/66 = 4.92

4. Indirect/Direct
   I/D = 424/401 = 1.06

5. Positive/Negative
   P/N = 31/0 = 0.00

TABLE 24

Behavioral Matrix for Basketball Session 2, Coach B

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	201	11	130			26		34	7			2	411
2 praise	10		3										13
3 instruct	140		109	16		1		7					273
4 demo+	7		9										16
5 demo-													0
6 feedback	20	1	6			5		2					34
7 phys.guid	1					1							2
8 organize	28	1	9			1	2	20	3			2	66
9 hustle	2		6					2					10
10 criticize													0
11 manage													0
12 other	2		1					1				1	5
total	411	13	273	16	0	34	2	66	10	0	0	5	830

(See note at Table 4 to interpret)

TABLE 25

MCBOS Analysis of Combined Basketball sessions 1 and 2, Coach B

MCBOS Category	Frequency	Percent
1. Monitor	781	48.87
2. Praise	18	1.12
3. Instruct	508	31.79
4. Demo+	41	2.57
5. Demo-	1	0.06
6. Correct	52	3.25
7. Phys. guid	21	1.31
8. Organize	148	9.26
9. Hustle	15	0.94
10. Criticize	1	0.06
11. Manage	0	0
12. Other	12	0.75
TOTALS	1598	100%

Total Practice time - 100.0 minutes
Observations/minute - 15.98

Behavior Cluster Measures

1. Primary Coaching Behavior (C)
   Cats. 3 - 7
   (623/1598) 100 = 38.98%

2. Affective Behavior (A)
   Cats. 2. 9. 10
   (34/1598) 100 = 2.13%

3. Indirect Behavior (I)
   Cats. 1 - 2
   (799/1598) 100 = 50.00%

4. Direct Behavior (D)
   Cats. 3 - 11
   (787/1598) 100 = 49.25%

5. Positive Behavior (P)
   Cats. 2. 4. 7
   (80/1598) 100 = 5.01%

6. Negative Behavior (N)
   Cats. 5. 10
   (2/1598) 100 = 0.13%

7. Managerial Behavior (Ma)
   Cats. 8. 11
   (148/1598) 100 = 9.26%

Coaching Style Indices

1. Primary coaching/affective
   C/A = 623/34 = 18.32

2. Primary Coaching/Monitor
   C/M = 623/781 = 0.80

3. Primary Coaching/Manage
   C/Ma = 623/148 = 4.21

4. Indirect/Direct
   I/D = 799/787 = 1.02

5. Positive/Negative
   P/N = 80/2 = 40.00

TABLE 26

Behavioral Matrix for Combined Basketball
Sessions 1 and 2, Coach B

Categories of Coaching Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	T
1 monitor	440	15	176			41	17	75	11	1		5	781
2 praise	14		4										18
3 instruct	202	1	249	36	1	1	1	17					508
4 demo+	10		26	3		1		1					41
5 demo-			1										1
6 feedback	34	1	7	2		6		2					52
7 phys.guid	19					1			1				21
8 organize	53	1	35			2	2	49	3			3	148
9 hustle	5		7				1	2					15
10 criticize			1										1
11 manage													0
12 other	4		2					2				4	12
total	781	18	508	41	1	52	21	148	15	1	0	12	1598

(See note at Table 4 to interpret)

Data from Tables 25 and 26 show that the basketball coach B displayed an average of 15.98 codable behaviors per minute over a total of 100 minutes of two coaching sessions.

The clusters of D (49.25%) and I (50.00%) show that the coach almost equally distributed his behaviors between these two clusters, a position at the middle point of the authoritative-supportive continuum. Behaviors in clusters C (38.98%) and A (2.13%) make it very clear that the sessions observed were dominated by an atmosphere oriented to cognitive and motor aspects of performance. The clusters P and N show 5.01% and 0.13% of the total behavior respectively and all characteristic of positive learning environments.

The ratios of Coaching Style Indices show the following. The C/A ratio of 18.32 indicates that the coaching was dominated by cognitive and motor aspects of the performance. The C/M ratio was at 0.80 suggesting that the primary coaching behaviors were based on monitoring behaviors. The P/N ratio was at 40.00 indicating that the learning environment was a very positive one.

As regard to the preceding and following behaviors, it is interesting to note that of the three most frequently displayed behaviors were monitor, instruct, and organization, identical to those displayed by coach A of the sport. 202 instructional behaviors preceded, and 176 instructional behaviors followed monitoring behavior; 176 monitoring behaviors preceded, and 202 monitoring behaviors followed instructional behavior; and 75 monitoring behaviors preceded, and 53 monitoring behaviors followed organizational behavior.

Summary

All the coaches created and maintained a very positive atmosphere of the coaching sessions of which is confidently believed rewarding for coaching. They tend to have adopted a moderately authoritative style of coaching with the orientation to cognitive and motor aspects of performance.

It is interesting to note that both gymnastic coaches displayed the same three most frequent behaviors and most frequent combinations of behavior. They are Monitor, Instruct, and Corrective feedback; and Monitor/Monitor; Monitor/Instruct, Monitor/Corrective feedback. These behavioral patterns are consistent with good teaching and coaching practice (Travers, 1973; Flanders, 1970; Tharp and Gallimore, 1976; Rankin, 1978).

Another interesting phenomenon is that both basketball coaches displayed a almost one to one ratio of Primary coaching and Monitor indicating that primary coaching behaviors were largely based on monitoring behaviors. The two coaches also displayed the same three most frequent behaviors: Monitor, Instruct, and Organization. The most frequent combinations of behavior displayed by the coaches were Instruct/Monitor, Monitor/Instruct, Monitor/Organization. Again, these behavioral patterns are consistent with what contemporary instructional theory recommends (Flanders, 1970; Smith, 1980).

CHAPTER V

DISCUSSION

This chapter presents a critical analysis of the comments and suggestions made by some of the experts pertaining to the categories of MCBOS, followed by a discussion of the results of videotape records of the actual Chinese coaching behaviors validation of the MCBOS.

Analysis of the Experts' Comments

Question 2: Do you think that any of the categories should be taken away from the system? ______ Yes ______ No. If the answer is "Yes", please indicate what and why.

One out of the seven experts suggested that category 11 (management) should be taken out from the system. This suggestion was made based on the fact which revealed zero (0) count on this category in the coded data the experts had analyzed before they completed the Questionnaire. However, despite this fact, the other six experts still supported the principle of keeping this category in the system. A possible explanation to this may be: The MCBOS was designed to describe coaching behaviors of different levels that will vary from recreational to very high performance levels. This fact determines that users of MCBOS will work with coaches in different coaching situations, for example, physical education teachers who coach school athletic teams, coaches who work at spare-time sports schools, those who coach in provincial or national training centres, and physical education teachers/coaches who coach in specialized physical education institutions. In the first example, the athletes are normally day-time primary/high school students who train after normal school hours and go home after training. They reside outside their schools. The coaches at these coaching levels usually have to deal with matters of management in their coaching sessions. For instance, announcing time, place of next class if they do not have a fixed time/place to train, taking attendance, routine procedures, handing out/taking in training attire. However, athletes in central spare-time sports schools, provincial/national training centres and specialized physical education institutions normally live and eat together in the centres. As a consequence, classes in these centres are more likely restricted to training. Things unrelated to training are more likely dealt with outside the class because of the great convenience for management created by in-centre dwelling. It should be indicated that the training sessions video-taped for this study were made from an athletic school attached to a physical education institute. All the coaches as well as students resided in the institute. This fact helps to explain the zero count on the category management on these coaching sessions.

Question 3: Do you suggest to add any categories into the system? If "Yes", what and why?

An interesting fact is that, in spite of the agreement among all the experts that the proposed system could cover all the coaching episodes they had analyzed, three out of seven experts suggested adding "attitude", "manner"; one suggested "educate"; one suggested "feedback from students". A major justification for adding "attitude", "manner" was that the attitude or manner of the coach has great impact on the behavior of the athletes which will in turn greatly influence the quality of the class. Tone, pitch of voice, facial expressions, and postures of the coach, all of which will reflect the attitude of the coach, will have impact on athletes' behavior.

While the assumption of the impact of coach's attitude on athletes' performance is sound and understandable, it is important to understand the nature of this construct so that the decision whether or not to include it in the system is made. Webster's Ninth New Collegiate Dictionary (1985) defines attitude as "a mental position as regard to a fact or state", "a feeling or emotion toward a fact or state" (p. 114). It is understood that mental position, feeling or emotion are hypothetical constructs that are not directly observable, therefore, cannot be measured unless inferred from observable behaviors. Attitudes are only reflected in consistent observable behavior. Observable behaviors function as indicators of attitude. In coaching settings, for example, the attitude of the coach toward coaching might be reflected in his or her preparation of the class, on-time behavior, instructional behavior, level of patience towards slow learning students, and so on. What is needed for the present study is to focus on those observable behaviors of the coach so that coaching behaviors can be objectively described. This is in accordance with the point raised previously in Chapter 2 in which it was noted that one of the limitations of observational method is that it concentrates only on observable events and behaviors. That is, only those events that can be detected visually and/or audibly are measured (van der Mars, 1989). This is simply because hypothetical constructs are not directly measurable.

The Cluster measures, and Coaching style indices do provide valuable indications of underlying beliefs. For example, the balance between negative and positive behaviors, the extent of monitoring, and the balance between direct and indirect behavior. The difficulty of assigning meaning to these observations may be illustrated by the example of a high rate of monitoring behavior - is it because the coach is very thoughtful, reflective, or is he just too lazy to stay active?

Another point raised in Chapter 2 is that when used appropriately and reliably, systematic observation produces only descriptive information that is relatively objective. The data themselves cannot be used to evaluate how well or poorly the teacher or coach performed; rather they provide the information for judgments to be made later. Unfortunately, it is difficult, if not impossible, to assess attitudes of the coach in an objective and descriptive way. Traditionally, measurements evaluative or judgemental in nature are used to "rate" a person's attitude according his/her observable behaviors.

A final point made here is that based on the following two conditions: (a) if the assumption about the construct attitude made above is sound and acceptable; and (b) since the proposed categories could cover all the coaching behaviors the experts analyzed, the attitudes of the coach should have been reflected through their instructional, emotional, and other behaviors; we can come to a decision that it doesn't seem appropriate to include this hypothetical construct in the system.

One out of seven experts suggested adding "educate" to the system. The justification for this addition was that education is so important that it must be carried out throughout the coaching process. It is understood that the process of coaching is a process of education though the full range of experiences athletes undergo in sport, and though the effects these have on their understandings, beliefs, and attitudes. In other words, athletes are educated through athletic coaching. Indeed, the components of coaching such as instruction, demonstration, organization, feedback, and so forth are the major components of the teaching aspect of the educational process. In this sense, education is a general term and very broad in coverage. In this view, all coaching behaviors are intended to educate.

With regard to the suggestion of adding "feedback from students" that was supported by the comments: the communication in coaching is a two way process between the coach and athletes. The interaction between the coach and athletes is important. The coach's behavior is always contextual in coaching process. Therefore, feedback from athletes should be included in the system. It should be pointed out that this is a very sound and valuable point for the development of an observational system that intends to describe the interaction process of coaching. Of course, an observational system that is able to record both parties of the coaching process would be very valuable so that the inter-active behaviors of the two parties can be put in one context as they actually are. However, as indicated in Chapter 1 of the thesis, in order to make the present study manageable, the focus has been put on one of the two parties. Another way to look at this matter may be that the present study can be seen as the first step or phase of the development of an interaction observational system. This step focuses on the behaviors of the coach in a way that coaching behaviors are recorded according to their actual effects on athletes. In the second phase, behaviors of athletes could be the focus. The final step would be the integration of the first two steps to complete the interactional system. But if this were to be done the masses of data generated would require huge amounts of time to analyze and the outcome might not yield results that justify their huge effort.

Question 4: Do you think that any of the definitions of the categories need modifications to make it/them more appropriate? ______ Yes ______ No. If your answer is "Yes", then what, and how?

Three comments one from each expert were made and are presented below followed by discussion on each.

"Category 8 (organization) should include behaviors related to methods and strategies that are intended to organize the class."

This category in the proposed system was defined as "Verbal and nonverbal behaviors that are intended to structure, direct, or reinforce the arrangement of people, times, or equipment to create conditions for activity-oriented learning. These behaviors lead up but are not directly related to a learning situation or subject matter. During these periods, progress toward the coach's learning objectives for the particular session is not being made. This being the case, all verbal and non-verbal behaviors intended to organize the class should be fall into this category. Therefore, the comment above is actually a confirmation feedback.

"Category 3 (instruct) is a broad term. However, the associated definition tends to be narrow. Explanation and commands would fit the definition better than the proposed term, instruct."

The category was defined as:

> "Statements or actions about what to do, or how and why to do it. Questions to elicit recall of earlier instruction or to get participant ideas on performance technique, tactics, attitudes, or practice activity. This category is restricted to the subject matter at hand and includes requests and commands." (p. 3)

This category was designed to include verbal and non-verbal behaviors that are intended to "pass on knowledge". It is understood and obvious that behaviors of this kind involve numerous explanations and commands. However, they are not the only forms of technical message transmission process. Questions raised by the coach about how to perform a skill would be an exception since questioning is a form neither of explanation nor of command.

One expert stated: "Criticize would be a better term than scold to describe the behaviors defined in category 10 (scold)."

This category was designed to reflect negative emotional aspects of behavior of the coach and defined as "Statements intended to scold, criticize or reject the performance, behavior, feelings, or ideas of participant. This category includes sarcastic statements and expressions of displeasure, both verbal and nonverbal. Among nonverbal scolds are stamping the feet in disgust; a rapid whirl or pivot way from the offending action; a quick movement of the hands to the hips; slapping the forehead as the head is thrown back; a threatened or actual kick, punch, choking, or slashing action; a so-called raspberry or other unpleasant sound, such as a prolonged hiss; and any other action recognized by participants as intending to scold, criticize or reject." The three key terms are scold, criticize, and reject, and the first term was chosen as representative of the other two. Literally, scold is virtually attacking, and much stronger than the other two terms to reflect negative aspects of emotion in Mandarin. While criticize is not as strong as scold, it tends to be more popularly used than the other two terms in educational process of the Chinese culture, for instance, classrooms and/or coaching settings. For the purposes of describing coaching/teaching behaviors in Mandarin settings, the term criticize tends to be more acceptable than scold to MCBOS users as well as teachers/coaches and students/athletes although both terms serve the same function. Therefore, this wise, carefully thought suggestion may be more appropriate and acceptable for this category than the one chosen before.

Summary

Although the experts suggested modifications to some categories of the proposed system, they generally agreed that (a) the categories could describe the great majority of coaching behaviors displayed in all the coaching episodes they had analyzed; and (b) the ground rules were appropriate in terms of assigning ambiguous behaviors to their appropriate categories. Such agreement confirms that the 12 category system is capable of yielding a relatively complete and adequate description of coaching behavior in Mandarin coaching situations.

Based on the analysis of the MCBOS data carried out in this study, and the evaluation and analysis received from the experts in the P.R.C., it is concluded that the 12 categories appropriate for describing coaching in Mandarin are: monitor (1), praise and reward (2), instruct (3), demonstration positive (4), demonstration negative (5), corrective feedback (6), physical guidance (7), organization

(8), hustle (9), criticize (10), management (11), and other (12). This twelve-category system and their associate definitions serve the key component of MCBOS. Appendices 6 (English version) and 7 (Mandarin version) represent the complete categories, definitions and ground rules of the validated MCBOS.

Confirmation of MCBOS from Data Analysis

The analysis of the Chinese coaching behaviors of the collected data presented in Chapter IV showed extensive support for the finalized system. For example, the gymnastic coaches showed a total counts of 191 behaviors on the category of organization, and 327 behaviors on the category of physical guidance, accounting for 6.22 percent, and 10.65 percent of the total observations of the recorded gymnastic coaching sessions respectively. The basketball coaches showed 385 behaviors on organization, and 21 behaviors on physical guidance, accounting for 12.07 and 0.66 percents of the total observations of the basketball coaching sessions respectively. These results support the conceptual analysis made in Chapter III pertaining to the addition of the two categories to the MCBOS, and confirm the opinions of the experts from a quantitative stand point suggesting that such addition was appropriate for assessing coaching behaviors of the Chinese high performance levels.

It has been noted that the basketball coaches showed a low count of behaviors which were identified as physical guidance as compared to the count on the same category emitted by the gymnastic coaches. Intuitively, this might be because of either one or combination of the following two possible reasons: (a) the nature of the sport in which less physical guidance from the coach might be involved than some individual sports such as gymnastics; and (b) the small sample of the current study, that is, only two coaches of high performance coaching level were involved in the study. Physical guidance might be more frequent at other coaching levels of the sport, for example, lower competitive levels. The point to make here is that the low count on this instance does not necessarily mean that this category should be removed from of the system. At least two important reasons would support this point. First, like some other categories shared by both CBOS and MCBOS such as demonstration negative on which low counts have been found by the coaches of both sports of the present sample (0.18 percent by basketball coaches, and 0.13 percent by gymnastic coaches), physical guidance is an effective and important way of teaching/coaching at least for some sports such as gymnastics, diving, wrestling, and throwing events in athletics. Second, MCBOS is designed to describe Chinese coaching behaviors of different sports (individual sports, two-person sports, and team sports), and different levels of coaching. If evidence of reasonably high count on this category is found at any coaching level of any sport, it appears appropriate to keep the category in the system.

The modifications of some of the category definitions, for example, the inclusion of non-verbal behaviors to the categories of instruct and corrective feedback proved effective and appropriate. This was evidenced by relatively frequent occurrences of non-verbal behaviors by the Chinese coaches such as coach's whistling to start a drill, a game in which case the behavior should belong to the category of instruct, and imitating the incorrect part of a skill through a bodily posture to signal to the athlete what he did wrong (corrective feedback in this case). These occurrences also support the points made pertaining to the modifications of the category definitions.

In addition, from an experiential point of view, the ground rules summarized in Chapter III also proved useful and effective. The thirteen ground rules (eight from CBOS, three from Bond [1979], and two additions from the current researcher) together made the assessment of the collected data a relatively easy and smooth one.

The behavioral counts, percentages, clusters and coaching style indices proved useful in describing coaching behaviors in the Chinese situations as they had in the Canadian situations. This fact indicates that unlike categories of coaching behaviors that have been proven culturally affected, the various measures of data analysis remain unaffected. In speaking of the usefulness of the measures, Smith (1978) and Smith, Smoll and Curtis (1979) indicated that the usefulness of the various measures is based on their capability of describing of coaching behaviors accurately and consistently as what actually occur in coaching sessions. When valid instruments have been developed and tested, and research findings replicated, the measures may be potentially useful in providing information for the training of coaches, and in facilitating the monitoring of planned changes in coaching behaviors. If such an indication is the case, the analysis of Chinese coaching behaviors by means of observational studies should also benefit from such measures in terms of providing useful information for the training of coaches and facilitating the monitoring of planned changes in coaching behaviors.

Data Base of Chinese Coaching Behavior

A data base of Chinese coaching behavior can be considered in the sense that a total of approximate 384 minute coaching behaviors have been descriptively analyzed. It is believed that such data can provide, to some extent, the information of Chinese high level coaching behaviors, and may be useful to serve as data base for future studies of cross-cultural comparisons at similar coaching levels.

It should be indicated, however, that in order to ensure the trustworthiness of research findings, researchers of future studies who might use such data for comparison purposes should take the following into careful consideration: (a) the data only represent coaching behaviors of high level performance of the sports of gymnastics and basketball; (b) the data were collected from regular coaching sessions; (c) the subjects were four male coaches. No female coaches were involved in the study; and (d) only two coaches from each of the two sports involved in the study. Therefore, the data are by no means representative of Chinese coaching behavior as a whole although they provide, to some extent, the information about male coaching behavior of the high performance sports of gymnastics and basketball of the Chinese culture.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purposes of the present study were to develop and to validate the MCBOS appropriate for describing coaching behaviors of the Chinese culture. Specific objectives included: (a) to develop the categories of MCBOS; (b) to develop clear category definitions and ground rules as the basis for valid and reliable use of the system; and (c) to generate behavior clusters, coaching style indices, and behavior sequences based on grouping and analyzing the data so as to make the observational data useful in describing present behaviors and guiding change.

Based on a careful examination of the categories of CBOS and of some other 39 observational systems as well as the actual content analysis of Mandarin coaching behavior obtained during a pilot phase of the study, careful analytical work was carried out against several principles and criteria in guiding the development of the MCBOS. A group of twelve tentative categories along with a set of thirteen ground rules for valid and reliable use of the system was generated as a result of such analysis. The tentative categories and ground rules were then critically assessed by a group of experts with excellent Chinese coaching background and knowledge who generally confirmed the validity of the categories and ground rules as a result of their work of validating the system. However, a slight modification was made pertaining to the name of a category (from scold to criticize) based on the comments of an expert when an integration of the input from the experts was made. The categories of the MCBOS were finalized as monitor (1), praise and reward (2), instruct (3), demonstration positive (4), demonstration negative (5), corrective feedback (6), physical guidance (7), organization (8), hustle (9), criticize (10), management (11), and other (12), and the ground rules remained unchanged.

The various methods of the MCBOS for data assessment were generally imported from CBOS with two exceptions. They are: the generation of the behavioral cluster managerial behavior, and the modification of behavior matrix from 10 x 10 to 12 x 12 to fit the needs of the current system.

The coaching behaviors of the Chinese coaches were recorded over a total of eight practice sessions. The recorded behaviors were coded by the researcher according to the MCBOS categories and ground rules, and analyzed to provide descriptive information concerning category frequencies and percentages, behavior clusters, coaching style indices, and sequential aspects of the coaching behavior. It is believed that the information generated from these measures is useful in describing various aspects of the Chinese coaching behavior during practice sessions.

The descriptive information of the assessed Chinese coaching behavior may be useful to build a data base for future cross cultural comparisons. It should be indicated however that in order to ensure the trustability of research findings, researchers of future studies who might use such data for comparison purposes should be very careful in making delimitations of their studies.

Conclusions

Based on the results of this study the conclusions are made as follows:

1. The MCBOS can be used in an accurate and reliable manner to code coaching behaviors of Chinese coaching practice sessions, and to provide useful descriptive information about the coaching process, the training of coaches, and in facilitating the monitoring of planned changes in coaching behaviors.

2. The categories and ground rules are key components of the MCBOS. They provide an adequate base for the categorizing various coaching behaviors of the Chinese culture when used appropriately according to their definitions and rules of coding.

3. Unlike behavioral categories which may be culturally affected, the various measures for data treatment that have been employed by both CBOS and MCBOS may not be culturally affected. They are capable of organizing and interpreting categorized data to provide potentially useful information about the coaching process, the training of coaches, and in facilitating the monitoring of planned changes in coaching behaviors of Chinese culture.

4. The observer training is an important approach to the mastering of the proper use of the categories, definitions, and the ground rules of the system.

5. The results of the assessed Chinese coaching behaviors may be used to serve as a data base for future studies of cross-cultural comparisons at a similar coaching level. However, careful consideration should be given to the factors such as personalities of individual coaches, sports, session of the training seasons, sex of the coach(es) under study, and so forth when such data are used.

Recommendations

The following recommendations are based on the results of this study:

1. Future investigation of the development of a standardized training manual, perhaps incorporating an audio-visual module is desirable. This will facilitate greatly the valid and reliable use of the system if the

categories and ground rules are learned accurately and applied to treat observed data appropriately.

2. The MCBOS should be applied to coaches of both sexes, different coaching settings including different sports, and different coaching levels of the Chinese culture to validate further the functional use of the system.

3. There is an obvious need for further development of a data base which includes samples of observed coaching behavior from a large number of coaching settings of different sports, at different levels of performance. These samples should also be collected during different stages of the training seasons of the year.

4. If a means of a permanent method of recording such as video camera is used, it is recommended that the video camera be equipped with a function of displaying time accurate to seconds. This will enhance the coding accuracy greatly when the recorded data are coded. If the camera is not equipped with the time display accurate to seconds, then, either the television receiver or the video recorder should be equipped with on-screen display to ensure the accuracy of every five second interval.

5. When data are collected, every effort should be made to reduce the effects of the intervention of the videotaping on the behaviors of the coach and athletes to its possible minimum, and behavior recorded should reflect the context to its best in which the behavior occurs.

6. An important guideline for behavior identification, as specified in the MCBOS ground rules, behavioral effects should be emphasized throughout the process of behavioral coding.

7. The present study is preliminary in the sense that only the behavior of the coach was focussed upon. If an observational system that is able to describe the behavior of both coach and athletes of the coaching process would be very valuable so that the inter-dependable behaviors of the two parties can be put in one context as they actually unfold. The present study can be seen as the first step or phase of the development of an interaction observational system with the focus on behaviors of the Chinese coach. In the second phase, behaviors of athletes would be focussed upon to complete the interactional system.

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APPENDIX 1

TYPES OF UNITS IN OBSERVATIONAL SYSTEMS

1) Natural units.: Detected through the perceptual system and reflected in natural language. These are perceived as breaks in streams of behavior.

2) Units of behavior. Can also be described as natural units. Laws of perceiving forms are also valid for behavioral forms. Just as there are forms in the world of objects, there are dynamic and temporal configurations (e.g., direction or speed of movement, position of the body).

3) Inductive vs. deductive. Refers to the process by which units are constructed. For inductive units, one starts with the behavior and attempts to classify this specific behavior into generalized categories (e.g., Ethology). For deductive units, units are derived from theory, hypotheses, or logical propositions and then abstractions are made which yield behaviors which are identified as falling within these categories or units.

4) Directly observable vs. inferred. Two types are distinguished: those that are in principle invisible (e.g., a person's intentions, emotions, thoughts), and those that are invisible due to circumstances (e.g, instances when the observer cannot see the behavior because of an obstacle). Both instances require inference. The issues involved here are not so much whether inference should be used but at what stage in the data collection it must be used.

5) Descriptive vs. evaluative. The former notes concrete behaviors and suspends judgments. The latter summarizes and assesses a series of behaviors (e.g., one can observe a child for 30 minutes and conclude he is angry, or one can record the concrete behaviors which could lead to that judgment.)

6) Phenomenological. Behaviors that have the same form.

7) Morphological. Similar to a phenomenological unit but with an emphasis on the formal or structural aspects of the behavior as criteria for constructing.

8) Units based on factor analysis. Units or classes are based on dimensions emerging from the statistical analysis.

9) Discrete vs. continuous. This refers to the extent to which it is possible to count or measure behavior. The issue of discreteness vs. continuousness arises with the use of rating scales.

10) Simple vs. complex. Two views exist with respect to these types of units. The first views the uniqueness of the human cortex to analyze complex events and relies on ratings of complex concepts. The second is the construction of complex units out of already observed simple ones.

11) Indices as units. Composed of various indicators

drawn together. This type of unit is mentioned more frequently in the sociological literature than in the psychological literature.

12) Reductionist. These units are the result of finding the smallest unit of meaning, not necessarily the smallest observable unit. To be meaningful, it must have a particular meaning for the observer of the behavior or it must evoke a particular response in a partner.

13) Causal. Behaviors wherein those with a common cause are regarded as identical.

14) Functional. A unit defined with respect to its effect or context. The emphasis is on the importance of the context.

15) Situations as units. If one is concerned with behavior which is, to some extent, rule bound and has recurrent elements, then situations can be viewed as units. More precisely such a unit should be comprised of both situation and behavior.

16) Molecular.

17) Molar. Both terms are taken from Barker and Wright (1955). Molecular units are known as actones and molar units are actions (e.g., molecular: perspiration; molar: hurrying to school).

18) Time units. These refer to time intervals of time-sampling methods and to any time-derived measures used for behavior observation.

19) Action units or events. Conceptually similar to behavior unit and natural units, but is distinguished by its form and content.

APPENDIX 2

DEFINITIONS OF SUB-CATEGORIES OF INSTRUCT

Command, Order, Direct

Includes both verbal and nonverbal directions, orders and commands to which compliance is expected. Examples of verbal commands: "Stop! Run in here!" "Red team on offense, blue on defence!" Examples of nonverbal commands include actions or gestures by the coach indicating for example, the direction in which players are to run. Nonverbal commands also include instances where the coach puts the ball into play to begin a drill, and blowing a whistle to stop activity.

Lecture, Explain, Expand

Includes verbally giving facts or opinions about content or procedure. Examples: "In this drill it is important that this player runs right through to the baseline so that he can exchange under the basket". "The key to our defense is t he blocking power of our three front line players. So, when you re on the net you must be quick to read the offensive moves of the other team".

Request

Includes verbal statements by the coach which are not authoritative as in commands, and which do not require compliance. The receiver is given the option to reject or accept the statement. These statements are often made quietly, person to person. Examples: "Now you look as though you are ready to try...". After a player answers to a previous question - "Well let's try this...".

Question, Implied Question

Includes verbal and nonverbal questions to which answers or expected. These questions usually concern content or procedure. Example of a verbal question: "How could you counter a move like that?" Example of a nonverbal or implied question: an extended pause with raised eyebrows by a coach in an attempt to turn a player question back to the player for the answer.

Response to Player Question

Includes both verbal and nonverbal direct answers to player questions. Such verbal answers may give information or opinion, but must be responses that answer or are directed toward answering player questions. Example: "No, you need t remain close to the baseline." Nonverbal responses t player questions include shaking the head to indicate a "yes" or "no" or a gesture indicating a "don't know".

Confirmation Feedback

The coach indicates to the athlete, either verbally or nonverbally, that his performance or statement is correct. This confirmation and acceptance or ideas and performance is affect free. The feedback may indicate that performance was satisfactory and should be repeated in the same way, or that although satisfactory, performance will be improved further by specified modifications. Verbal example: "OK, your hand contacted the ball in just the right position." A nonverbal example may include nodding the head to indicate to a player that his performance is acceptable.

APPENDIX 3

DEFINITIONS OF TENTATIVE CATEGORIES OF MCBOS

1. MONITOR

The coach silently observes individuals, small groups, or the entire group as they practice or play. He she may talk to themselves or show incidental nonverbal behavior while monitoring. Unless these behaviors are seen to have real effects on participants they should be ignored and considered to be external signs of the covert thought processes going on in the coach's mind during monitoring.

2. PRAISE AND REWARD

The coach verbally or nonverbally praises, offers compliments, encouragement, acceptance or agreement, with participant behavior. Statements may refer to present, past, or future behavior or performance. Nonverbal praise such as nodding, pats on the back, hugging, clapping as in applause, and other recognized gestures of approval are included. Examples of verbal praise, with appropriate tone of voice: "Great!" "Yes, good work!" "Keep going, you will get it!" "OK! OK!"

3. INSTRUCT

Statements or actions about what to do, or how and why to do it. Questions to elicit recall of earlier instruction or to get participant ideas on performance technique, tactics, attitudes, or practice activity. This category is restricted to the subject matter at hand and includes requests and commands. Verbal examples: "Hold the hand in this position." "How could you try to counter a move like that by your opponent?" "Be alert all the time." "OK, go ahead." "Do you remember what we said about pacing yourself?" Nonverbal examples: throwing a ball into the court to start a practice drill; lifting the hand with a stop watch to signal a start to run; clapping hands to signal the start of a move in helping participant master correct timing of that move; in pacing drills of ball games, clapping hands once may mean the command of moving to left, twice to right, and so on.

4. DEMONSTRATION, POSITIVE

The coach, or a participant at the request of the coach, demonstrates how an action is to be carried out. See the ground rules following for an explanation of how to record combined verbal instruction and demonstration.

5. DEMONSTRATION, NEGATIVE

The coach, or a participant at the request of the coach, demonstrates an error in actio or an action to be avoided. Again, see the ground rules for recording mixed instruction and negative demonstration.

6. CORRECTIVE FEEDBACK

Statements, questions, or actions by the coach that follow direct observation of performance and which are intended to point out errors or inappropriate aspects of the performance. Such statements or actions are essentially information, as contrasted with praise or criticism which tend to convey an emotional reaction in the sense of positive valuation or negative valuation of the coach to an observed performance. Corrective feedback is restricted to knowledge or skill areas in which performance can be considered correct or appropriate by definition, or as a matter of fact, or by convention. Examples: "Your head is too far forward." "Can you get more weight onto your left foot?" "That is not how we play a two-on-one situation" (stated in a matter of fact tome of voice). "You are unstable because your feet are too close together, spread them, widen your base." Nonverbal examples: after detecting a performance mistake, the coach imitates the incorrect part of the performance. This is usually done with previous verbal feedback about the same mistake and the participant can understand it well when the nonverbal feedback is provided.

7. PHYSICAL GUIDANCE

The coach, or a participant at the request of the coach, physically helps a participant practice a skill. This includes physically guiding a participant to imitate the correct bodily moves, spotting, and any other actions that intend to help participant learn a skill through physical contact.

8. ORGANIZATION

Verbal and nonverbal behaviors that are intended to structure, direct, or reinforce the arrangement of people, times, or equipment to create conditions for activity-oriented learning. These behaviors lead up but are not directly related to a learning situation or subject matter. Principally, the opportunity to learn is not present when these behaviors occur. Examples of nonverbal behavior: The coach announces substitutions, or reassigns position, sweeps the court, moves equipment to another area for the next drill, retrieves a ball from the stands. Examples of verbal behavior: "Make five lines facing me on the sideline;" "Put the basketballs in the ball bag;" "adjust the width of the bars and tighten them up."

9. HUSTLES

Statements or actions by the coach to activate or intensify previously instructed behaviors. Among the actions that can be used as hustles are vigorous, short, rapid clapping (not intended as applause); a quick jabbing motion of a forefinger directed at an individual or group; a quick lunging motion of the shoulders or body; and any other nonverbal behavior that is recognized by participant as calling or more effort or intensity. Examples of verbal hustles: "Go! Go!" "Drive harder!" "Move it!" "C'mon!" "Hustle!"

10. SCOLD

Statements intended to scold, criticize or reject the performance, behavior, feelings, or ideas of participant. This category included sarcastic statements and expressions of displeasure, both verbal and nonverbal. Among nonverbal criticisms are stamping the feet in disgust; a rapid whirl or pivot way from the offending action; a quick movement of the hands to the hips; slapping the forehead as the head is thrown back; a threatened or actual kick, punch, choking, or slashing action; a so-called raspberry or other unpleasant sound, such as a prolonged hiss; and any other action recognized by participants as intending to scold, criticize or reject.

11. MANAGEMENT

The coach engages in verbal or nonverbal activity associated with management, housekeeping, routine procedures, announcement, arrangements, other than instruction or arranging or grouping participants for instruction or practice activity. Among management behaviors are taking attendance; making arrangements with groundskeepers, janitors or others working or playing in the area; collecting money from participants; giving details related to schedules or travel; arranging car pools;

distributing or collecting game uniforms; and so on.

12. OTHER

Any coaching behaviors displayed which do not fit into any of the other 11 categories. Statements that cannot be understood or occasions where the noise level is so high that the coach cannot be heard over it are recorded here. Chatting or visiting with others, or attending to personal matters unrelated tot he coaching or management tasks at hand, fall in this category.

NOTE: **ABOVE UNDERLINED CATEGORIES ARE EITHER REDEFINED OR NEW TO THE CBOS**

APPENDIX 4

MCBOS VALIDATION SHEET

Personal data

NAME:__________ SEX:____ (MALE)____ (FEMALE) AGE: (check one) ____ 16-22, ____ 21-25, ____ 26-30, ____ 31-35, ____ 36-40, ____ 41-45, ____ 46-50, ____ 51^{+}

Educational experience (check the highest one)

___ Elementary ____ Junior High ____ Senior High ____ University ___ Bachelor degree ___ Masters ___ Doctorate

Physical Education Major ___ Yes ___ No

Athletic Experience

Event _____, Spare time sport school ______ year(s), Municipal team ______ year(s), Provincial team _____ year(s), University team ______ year(s), National team _____ year(s), Athletic certificate obtained: class three ___, class two ___, class one ___, Master _____

Coaching Experience

event ____, spare time sport school _____ year(s), Municipal

team ____ year(s), provincial team ____ year(s), University team ____ year(s), National team ____ year(s), Coaching certificate obtained: class two ____, class one ____, superior ____, national ____.

Comments on categories of MCBOS

Please answer the following questions. Your comments are very important to the study and your work is appreciated!

Can the categories cover all of the coaching behaviors you have analyzed? ______ yes ______ no. If above answer is "No", please specify what behavior(s) does/do not fall into any one of the categories in the space provided below:____

____

____

____

____

____

Do you think that any of the categories should be taken away from the system? ____ yes ____ no. If the answer is "Yes", please indicate what and why.

____

____

Do you suggest to add any more categories into the system? If "Yes", what and why?

Do you think that any of the definitions of the categories need modifications to make it/them more appropriate? ____ yes ____ no. If your answer is "Yes", then what, and how?

Do you think that the ground rules are appropriate and effective in terms of assigning ambiguous behaviors to the categories to which they should belong? ____ yes ____ no.

Do you suggest to add more rules, if any, to help the assessment of encoding ambiguous behaviors? ____ yes ____ no. If yes, then, what?

Do you suggest to take away any of the ground rules you think it/they may be useless and/or unpractical? ____ yes ____ no. If yes, then, what?

Thank you very much for your help!!!

APPENDIX 5

CALCULATION OF SCOTT'S COEFFICIENT

Step 1

Begin by tallying the behaviors coded into categories for a limited sample of the data (in this study 13 minute samples were used).

Step 2

Place the totals for each of the twelve categories in column 1 for observer 1 and column 2 for observer 2.

Step 3

In column 3 place the percentages for observer 1; in column 4 percentages for observer 2.

Step 4

Column 5 contains for each category the absolute (ignore signs) percent difference between the two observers.

Step 5

The total column 5 represents percent disagreement which is subtracted from 100 to give percent agreement (Po).

Step 6

Take the average percent (both observer combined) figure for each category, square it and dived by 100, then enter these in column 6.

Step 7

The sum of column 6 represents percent agrement expected by chance (Pe).

Step 8

Scott's coefficient is calculated by:

$$\text{Pi} = \frac{\text{Po} - \text{Pe}}{100 - \text{Pe}}$$

Sample Data for Calculation of Scott's Coefficient of Reliability

	Frequency		Percent			
Category	A	B	A	B	%difference	$(X\%)^2$
1	66	71	32.5	34.8	2.3	11.3
2	9	8	4.4	3.9	0.5	0.2
3	32	34	15.8	16.7	0.9	2.6
4	8	7	3.9	3.4	0.5	0.1
5	0	0	0	0	0	0
6	25	26	12.3	12.8	0.5	1.6
7	17	16	8.4	7.8	0.6	0.7
8	5	7	2.5	3.4	0.9	0.1
9	4	3	2.0	1.5	0.5	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	37	32	18.2	15.7	2.5	2.9
Total	203	204	100	100	9.2	19.5

$$\text{Pi} = \frac{(100 - 9.2) - 19.5}{100 - 19.5} = \frac{71.3}{80.5} = 0.89$$

Note: above data was from the reliability check on Gymnastics.

APPENDIX 6

VALIDATED CATEGORIES AND GROUND RULES OF MCBOS

CATEGORIES

1. MONITOR

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9. HUSTLES

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10. CRITICIZE

Statements intended to scold, criticize or reject the performance, behavior, feelings, or ideas of participant. This category included sarcastic statements and expressions of displeasure, both verbal and nonverbal. Among nonverbal criticisms are stamping the feet in disgust; a rapid whirl or pivot way from the offending action; a quick movement of the hands to the hips; slapping the forehead as the head is thrown back; a threatened or actual kick, punch, choking, or slashing action; a so-called raspberry or other unpleasant sound, such as a prolonged hiss; and any other action recognized by participants as intending to scold, criticize or reject.

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Any coaching behaviors displayed which do not fit into any of the other 11 categories. Statements that cannot be understood or occasions where the noise level is so high that the coach cannot be heard over it are recorded here. Chatting or visiting with others, or attending to personal matters unrelated tot he coaching or management tasks at hand, fall in this category.

GROUND RULES

Rule 1.

Numbers corresponding to the twelve categories are recorded by an observer every five seconds. When more than one category of behavior is observed during a five second interval all categories observed are recorded. The numbers indicating categories of observed behavior are recorded in behavior encoding sheets. If any one category of behavior is observed to continue then the number representing the category is repeated every five seconds. Each practice or workout or portion of one that is observed begins and ends by arbitrary convention by recording a 12.

Rule 2.

Because the system is descriptive, not evaluative, the observer should not try to guess the intent of the coach but rather to assign behaviors to categories according to how he or she perceives their effect on the participants. For example, a comment may sound like a hustle but the participants clearly react with annoyance and embarrassment which would indicate it had been received as a criticism. Then it should be recorded as a criticism.

Rule 3.

Tone of voice and other aspects of nonverbal behavior must be used in assigning behaviors to categories. The same question, for example, asked in different tones of voice, with appropriate gestures or facial expressions might be properly categorized as instruction (as defined above), as a praise, as a criticism, or even as corrective feedback.

Rule 4.

During instructional processes, if a demonstration is carried on silently and not described as the action is carried out a four (4) is recorded if positive, a five (5) if negative, at each five second interval as long as the demonstration continues. A demonstration may shift back and forth from positive to negative, which would be indicated by recording 4' and 5's as appropriate. If the demonstration is accompanied simultaneously by verbal instruction, record a 3 or 6 and either a 4 or 5 for each five second interval during which this is continued.

Rule 5.

In practice situations, if the coach physically imitates the "incorrect" part of the performance of an athlete immediately after direct observation of the performance, this behavior is considered as nonverbal corrective feedback, a 6 then should be recorded. It is understood that such nonverbal behaviors serve the same function as does verbal corrective feedback, that is, both are intended to correct performance mistakes through different forms of message transmission. Negative demonstration is involved in more direct instructional process than practice as contrasted to nonverbal corrective feedback. In principle, negative demonstration functions as a means of preventing or avoiding performance mistakes while nonverbal corrective feedback is used as a means of correcting performance mistakes.

Rule 6.

Behaviors that are intended to create conditions for direct instruction such as setting up equipment, keeping order in the class, announcing substitutions, arranging people for instruction should belong to the category of organization. A 8 should be recorded in this case. It should be pointed out, however, that because these behaviors are indirectly related to instructional behavior, they should be distinguished from management behaviors such as housekeeping, routine procedures, announcement, arrangement, that are unrelated to the subject matter at hand.

Rule 7.

Laughter by the coach in response to a participant is praise if it shares positive feeling or reassures, but is criticism if it rejects or ridicules.

Rule 8.

A phrase such as "OK" or "alright" may be a praise or criticism depending on the context, or when used in a matter-of-fact way as in, "Well that's done, lets move on to the next thing," it would be an organization.

Rule 9.

Saying a participant's name may be merely part of a praise, a criticism, a hustle, or even corrective feedback, depending on the tone of voice and other nonverbal behavior the coach displays when he or she says it.

Rule 10.

Where the coach is involved in activity as a player or his or her own warm up or stretching activities they should be coded as organization, although clearly he or she may exhibit other behaviors which must be appropriately coded.

Rule 11.

In situations where the coach calls out the score it may be coded as organization or a criticism depending on the context, emphasis and way it is received by the player(s).

Rule 12.

An apology by the coach for inadequate placement of a ball or a mistake should be interpreted as: "It's not your fault, it's mine". This is a form of acceptance to a performance or behavior and should be scored as praise and reward.

Rule 13.

In environments where participants are spread out over large areas, or where vision or hearing are difficult (as in a pool), normal intervals of time required in waiting because of such problems should be recorded as monitoring, if the coach is silent. However, during the period the coach waits to get the attention of the group, or as they assemble, he or she may produce behavior clearly in any of the other eleven categories.

教练員行为观察系统

该观察系统由12个类别的教练行为组成，它适用于很多不同項目的教练員的教练行为的观察和分析，也可用于對體育教師的教学行为的观察和分析。该系统是为观察分析运动训练中教练員、体育教師的行为而设计的，故不适用于观察、分析运动比赛、讲座、及会议中的教练員和体育教師的行为。

本系统所包括的行为范围广泛，它能用以观察分析單人項目如游泳、田径、双人項目如摔跤、击剑、网球以及所有集体項目的教练員的教练行为。

本系统的主要用途是作为一个工具以描述教练員在训练过程中的行为，以及这些行为的不同方式的组合。在任何情况下，本系统都應用于描述教练員的行为而不应用以评价其行为。由于本系统可具体地记录教练員的行为和行为发生的背景，它在一定的程度上客观地反映教练員的行为并为分析其行为提供分析基础。运用本系统意义通常是：第一、提供某教练員在某训练阶段中的行为变化，亦可用于不同个体、不同體育項目、以及不同训练水平之間的观察和分析。第二、用于较准确地描述优秀教练員的行为特征。

為高質量的训練提供心理學方面的参考數据，第三，衡量某训練水平是否与某標准一致。熟練地运用本系统，可有助于了解教練員的行為对运动員的影响，從而找到在训練過程中心理學方面的带规律性的東西。

下面是本系统10个行為類别的定义

1、观察：运动員練習時，教練員无声地观察单个运动員、小组或整体，他可自言自语或偶尔发出非语言行為，除非实际起到影响运动員的作用，这些行為应忽略不记，而认為这是该教練員在观察過程中思维過程的反映。

2、誇奬和奬励：教練員以语言或非语言的方式夸奬、鼓励、接受或表示赞同运动員的行為，夸奬和奬励可針对現在的、過去的、或将来的行為或表現。非语言的奬励可表現為点頭、拍运动員的背、鼓掌、以及其他表示认可的形式。

语言奬励的例子可表現為带适合声调地说："太棒了"、"对，做得好"、"就這樣做"、"好，好"。

3、傳授：关于做什么、如何做和为什么做的讲述、提問和其它非语言行為激发，引导运动員回忆动作要領

或启发运动員对技术、战术進行思维的行为也属这一類。該类行为限于知识和技术方面的傳授，包括要求和指令。

例："手應該放在这个位置"、"你怎樣才能阻止对方的移动"、"随时保持注意"、"好，开始"、"记得怎樣移动步伐吗"。

非语言行为举例：将球抛入场地以指令練习开始，持马錶的手在空中揮动一下以指令运动員起跑，以击掌的方式帮助运动員抓住正确的动作时机，步伐練习時，击一掌以指令步伐左移，连續击二下以指右移，击三下前移，击四下为後移等。

4、正确示范：教練員或教練員让某运动員示范如何正确做某一动作。（见基本规则中关于如何记录综合语言讲授和示范的解釋）

5、错误示范：教練員或教練員让某运动員示范某一錯误动作，或某一应避免的动作。（见基本规则中关于如何记录综合语言讲授和错误动作示范的解釋）

6、纠正性反饋：在发現运动員动作错误后，教練員针对其错误作出的提问，讲述或其它相應的非语言行为。該類行为在于指出运动員練习中的错误或不恰當的地方，其目的在于提供反馈信息。這类行为不同于奖励和責備。

因为奖励和责备往往表示教练员在观察运动员的练习后正面或反面评价，而纠正性反馈限于知识或技术领域对其错误提供反馈信息。

例："你的頭太前傾了"。"你能将身体重心向左脚多移动一些吗"。"二對一的练习不是这样的"（以实事求是、不带情绪的口氣阐述）"不稳的原因在于你的双脚太拢，分开些，增大面积"。

非语言行为举例：观察到运动员的动作错误后，教练员摹仿运动员的动作错误以提示该动作做错了。这种行为一般基于以前教练员的语言提示，当教练员以非语言行为方式进行动作错误反馈时，运动员能理解教练员的行为涵义。

7. 保护与帮助：教练员或某运动员在教练员的旨意下帮助某运动员练习。该类行为包括手把手地帮助摹仿正确动作要领、保护，以及其它以身體接触的方式帮助运动员练习。

8. 组 织：任何关于组织课的语言或非语言行为包括人员、时间、器材的组织以使为直接的教學创造条件。该類行为屬教學的先驟，但非直接教學。

语言行为举例："面对我在边线后排成5横排"。"将球送回球框里"。"将杠子的宽度调好，并拧紧螺丝"。

非语言行为举例：安排运动员的位置以使练习参进训

练计划、清理场地、移动器械为下一个练习做准备、从球框里取球等。

9、催　促：教练员的语言或非语言行为意在激发、增强以前所学过的行为动作。催促行为可表现为强有力的、短促的击掌（该击掌不是表示鼓励）、食指快速指向某运动员或某组人、肩或躯体的快速移动、以及任何其它的非语言行为被运动员视为激发他们的努力。

语言催促举例："快、快"、"用心"、"坚持"、"加速"、"加油"。

10、批　评：针对运动员的练习行为、感觉或想法的带有责备、批评、拒绝性的陈述。该类行为包括语言或非语言形式的讽刺或不高興的表示。非语言的批评可为表示不高兴的跺脚、不理睬犯错的运动员或有意"冷淡"他（她）、甩头、拍头、踢、击打表示不高興的行为，拖长的叹氣聲和其它任何被运动员视为责备、批评或拒绝的行为。

语言批评举例：（责备语气的）"糟透了"、"马上停下来"、"滚出去"、"妙、妙极了"、"你在搞什么鬼名堂？"、"你为何如此笨？！（懒、自私、胆小等）"。

11、管　理：教练员的语言、非语言行为用于管理、事务性的事情、通知、安排和其它与教学、练习无关的事务性的事情。该类行为可为通知开會学习、安排旅行时间、收

发运动服装等.

12.其　它：任何教练员发出的，不属以上任何一類的行为归这一类，听不清的语言，听不懂的语言，或因环境所致听不清楚的语言或看不清楚的行为，或不理解其意的行为也归这一類，教练员同其他人或运动员的闲聊及其它任何与训练或管理无关的行为都归这一類。

使用本系统的基本原则

使用本系统时运用一系列基本原则的目的在于建立行为分析的规范条件，以使一些模稜两可的行为能归入恰当的行为类别，这对客观地描述教练员的行为有很重要的作用。

规则 1

与各類行为相應的號码按每5秒钟的时间間隔进行记录，如在5秒钟内教练员的行为多于一類或几類，那么所有观察到的行为均按不同類别记录下来，表示行为類别的數字以1-12格的横栏形式记录，所以每一横栏包括教练员在某一分钟内的行为，如某一类的時间长于5秒钟，那么代表该類行为的号码应以每5秒的时间間隔连续记录于相應的格内，每次课的观察的开始和结束按传统记录为12（其它）。

规则 2

鉴于本观察系统在于描述行为而不评价行为，观察者不应该猜测或推测教练员的行为动机，而应根据教练员的行为对运动员的实际影响确定其行为類别。例如，有些话听起来象催促，但运动员实际反映出烦恼或窘迫，那么该行为应记录为批评(10)。

规则 3

声调和各种非语言行为也应根据影响效果确定不同的行为類别。例如，同一种提问，但伴随不同的声调、不同的面部表情、不同的身体姿势，可根据具体情况记录为传授(3)、夸奖和奖励(2)、批评(10)或者甚至为纠正性反馈(6)。

规则 4

示范无论是正确的还是错误的，通常伴随着语言讲解。当只有正确示范而没有相应的解釋时，应记录为4。如果是错误的示范，则应记录为5。如正确和错误的示范交替进行，则4和5应交替记录相应的格内。如示范伴随解釋，那么3和4(或5)应同時记录。

规则 5

练习时如果教练员在直接观察到运动员动作错误后

摹仿其错误动作向运动员示范，该行为应归于纠正性反馈(6)一类。因为此类非语言行为其功能同于语言纠正性反馈，那二者皆在纠正动作错误，只是表达的方式不同而已。然注意非语言纠正性反馈不同于错误示范(5)，在于纠正性反馈多出现于练习时，而错误示范多出现在介绍新动作时。原则地说，错误示范的作用在于预防动作错误，而纠正性反馈在于发现错误后纠正其错误。

规则 6

为教学创造条件的行为，如安排器材，组织课，宣布替换队员等应归入组织(8)一类。但应指出，由于该类行为间接与教学相联系，它们应与管理(11)行为区别开来，即一切属于管理性质但与训练无关的行为。

规则 7

教练员对运动员的笑，如带有肯定的感情成份则应记录为奖励(2)，如带有拒绝或嘲弄或讥讽的成份则应记录为批评(10)。

规则 8

诸如"行""可以"之类的短语在不同的情况下可能属表扬(2)或批评(10)(即说反话)，不带情绪的陈述如"我们完成了这个练习，下面进行下一个练习"，则应归为组织(8)。

规则 9

叫运动员的名字根据不同情况可定为讲授(3)奖励(2)批评(10)催促(9)或甚至纠正性反馈(6)(叫名字可用不同的声调面部表情及身体姿势表示不同类别的行为)

规则 10

如教练员参与某个练习或自我做准备活动、示范练习等该类行为应归入组织(8)。当他做这些练习时，他可能表现其他类别的行为，那些行为亦应归入适当的行为类别中。

规则 11

教练员报比分(如练习比赛时)根据不同的情况，强调的重点、语气和行为对运动员的影响，可定为组织(8)批评(10)或夸奖和奖励(2)

规则 12

在某些环境下如场地大、运动员分散、在视、听有困难的情况下(如游泳池、足球场)教练员常常需要时间等待作出相应的行为反应，这种等待时间(无声地等待)应记录为观察(1)但是，在等待的时间内，如教练员发出其它任何行为，那么该行为归入适当的行为类别中。